

[Generate Collection](#)[Print](#)

## Search Results - Record(s) 1 through 7 of 7 returned.

- ☐ 1. [20040234529](#). 22 Jan 04. 25 Nov 04. Helicobacter pylori adhesin binding group antigen. Boren, Thomas, et al. 424/164.1; 530/388.4 A61K039/40 C07K016/12.
- ☐ 2. [20020061545](#). 22 Jan 01. 23 May 02. Streptococcus pneumoniae antigens and vaccines. Choi, Gil H., et al. 435/7.34; 424/190.1 435/252.3 435/6 435/69.3 536/23.7 G01N033/569 C12Q001/68 C07H021/04 A61K039/02 C12N001/21.
- ☐ 3. [20020044949](#). 01 Apr 97. 18 Apr 02. 76 KDA HELICOBACTER POLYPEPTIDES AND CORRESPONDING POLYNUCLEOTIDE MOLECULES. KLEANTHOUS, HAROLD, et al. 424/235.1; A61K039/02.
- ☐ 4. [6887663](#). 22 Jan 01; 03 May 05. Streptococcus pneumoniae SP036 polynucleotides. Choi; Gil H., et al. 435/6; 435/252.3 435/254.11 435/257.2 435/320.1 435/325 435/471 435/69.1 435/69.7 435/70.1 536/23.7. C12Q00168 C12P02106 C12N01500 C07H02104.
- ☐ 5. [6709656](#). 10 Feb 99; 23 Mar 04. Helicobacter pylori adhesin binding group antigen. Boren; Thomas, et al. 424/190.1; 424/184.1 424/234.1 435/252.1 435/7.32 514/25 530/350. A61K039/02.
- ☐ 6. [6573082](#). 28 Mar 00; 03 Jun 03. Streptococcus pneumoniae antigens and vaccines. Choi; Gil H., et al. 435/252.3; 435/320.1 435/325 536/23.7. C12N001/20 C12N015/00 C12N005/00 C07H021/04.
- ☐ 7. [WO 200000614A](#). Novel Helicobacter pylori antigens useful for diagnostic and therapeutic purposes. DILTS, D A, et al. A61K038/16 A61K039/106 A61K039/40 C07K014/205 C07K014/34 C07K016/12 C12N001/21 C12N015/31 C12N015/62.

[Generate Collection](#)[Print](#)

Terms	Documents
\$GYQIGES	7

[Prev Page](#)[Next Page](#)[Go to Doc#](#)

## WEST Search History





DATE: Tuesday, May 03, 2005

Hide?	<u>Set</u> <u>Name</u>	<u>Query</u>	<u>Hit</u> <u>Count</u>
	<i>DB=USPT; PLUR=YES; OP=AND</i>		
<input type="checkbox"/>	L1	blood near2 group near2 binding near2 protein	4
<input type="checkbox"/>	L2	antiadhesion or anti-adhesion or anti-adhesin or antiadhesin or antibab or antibaba or anti-bab or anti-bab-a or antibab\$3	963
<input type="checkbox"/>	L3	L2 and helicobacter	12
<input type="checkbox"/>	L4	L3 not l1	12
<input type="checkbox"/>	L5	L3 not l1	12
<input type="checkbox"/>	L6	antibab or antibaba or anti-bab or anti-bab-a or antibab\$3	6
<input type="checkbox"/>	L7	helicobacter near10 (adhesin or adherence or attachment or receptor)	56
<input type="checkbox"/>	L8	L7 and (blood or lewis)	51
<input type="checkbox"/>	L9	L7 same (blood or lewis)	17
<input type="checkbox"/>	L10	antihelicobacter	1
<input type="checkbox"/>	L11	boren.in. and bab	2
<input type="checkbox"/>	L12	polyclonal same helicobacter same adhesin	0
<input type="checkbox"/>	L13	polyclonal same pylori same adhesin	3

END OF SEARCH HISTORY

YSTE:OS - DIALOG OneSearch  
 File 155:MEDLINE(R) 1951-2005/May W1  
 (c) format only 2005 The Dialog Corp.  
 File 156:ToxFile 1965-2005/Apr W4  
 (c) format only 2005 The Dialog Corporation  
**\*File 156: ToxFile has been reloaded with the 2005 MeSH.**  
 Please see HELP NEWS 156 for details.  
 File 144:Pascal 1973-2005/Apr W4  
 (c) 2005 INIST/CNRS  
 File 399:CA SEARCH(R) 1967-2005/UD=14219  
 (c) 2005 American Chemical Society  
**\*File 399: Use is subject to the terms of your user/customer agreement.**  
 Alert feature enhanced for multiple files, etc. See HELP ALERT.  
 File 654:US Pat.Full. 1976-2005/Apr 28  
 (c) Format only 2005 The Dialog Corp.  
 File 349:PCT FULLTEXT 1979-2005/UB=20050428,UT=20050421  
 (c) 2005 WIPO/Univentio  
 File 16:Gale Group PROMT(R) 1990-2005/Apr 29  
 (c) 2005 The Gale Group  
**\*File 16: Alert feature enhanced for multiple files, duplicate removal, customized scheduling. See HELP ALERT.**  
 File 5:Biosis Previews(R) 1969-2005/Apr W3  
 (c) 2005 BIOSIS  
 File 34:SciSearch(R) Cited Ref Sci 1990-2005/Apr W4  
 (c) 2005 Inst for Sci Info  
 File 340:CLAIMS(R)/US Patent 1950-05/Apr 28  
 (c) 2005 IFI/CLAIMS(R)  
**\*File 340: 2004 Reload is online as of October 6, 2004. Pricing changes effective October 1, 2004. See HELP NEWS 340 for details.**  
 File 65:Inside Conferences 1993-2005/May W1  
 (c) 2005 BLDSC all rts. reserv.  
 File 444:New England Journal of Med. 1985-2005/Apr W3  
 (c) 2005 Mass. Med. Soc.  
 File 370:Science 1996-1999/Jul W3  
 (c) 1999 AAAS  
**\*File 370: This file is closed (no updates). Use File 47 for more current information.**  
 File 143:Biol. & Agric. Index 1983-2005/Mar  
 (c) 2005 The HW Wilson Co  
 File 35:Dissertation Abs Online 1861-2005/Mar  
 (c) 2005 ProQuest Info&Learning  
 File 357:Derwent Biotech Res. 1982-2005/May W1  
 (c) 2005 Thomson Derwent & ISI  
 File 358:Current BioTech Abs 1983-2005/Apr  
 (c) 2005 DECHEMA  
 File 348:EUROPEAN PATENTS 1978-2005/Apr W04  
 (c) 2005 European Patent Office  
 File 347:JAPIO Nov 1976-2004/Dec(Updated 050405)  
 (c) 2005 JPO & JAPIO

Set	Items	Description
---	-----	-----

Executing TH43234556

>>>SET HILIGHT: use ON, OFF, or 1-5 characters

117113	HELICOBACT?
119190	PYLORI
271	PYLORIS
2373	PYLORIDIS
27	PYLORUM

```

        124  HPYLORI
        22761  PORIN?
        60997  HOP
        291  HOPA
        154  HOPB
        55  HOPZ
        289617  HOPE
        4751  AU=LING
S1      306  (HELICOBACT? OR PYLORI OR PYLORIS OR PYLORIDIS OR PYLORUM
            OR HPYLORI) (100N) ((PORIN? OR HOP OR HOPA OR HOPB OR
            HOPZ OR HOPE) OR AU=LING)
? s s1/1997:2005
Processing
Processed 10 of 19 files ...
Processing
Completed processing all files
        306  S1
        48288846  PY=1997 : PY=2005
        S2      253  S1/1997:2005
? s s1 not s2
        306  S1
        253  S2
        S3      53  S1 NOT S2
?
? t s3/ti,kwic/all
>>>KWIC option is not available in file(s): 399

```

[ExPASy Home page](#) [Site Map](#) [Search ExPASy](#) [Contact us](#) [Proteomics tools](#) [Swiss-Prot](#)

Search  for

=====

Welcome to the SIB BLAST Network Service

If results of this search are reported or published, please mention that the computation was performed at the SIB using the BLAST network service. The SIB BLAST network service uses a server developed at SIB and the NCBI BLAST 2 software.

In case of problems, please read the [online BLAST help](#).  
If your question is not covered, please contact [<helpdesk@expasy.org>](mailto:helpdesk@expasy.org).

NCBI BLAST program reference [PMID:9254694]:

Altschul S.F., Madden T.L., Schäffer A.A., Zhang J., Zhang Z., Miller W., Lipman D.J. Gapped BLAST and PSI-BLAST: a new generation of protein database search programs. Nucleic Acids Res. 25:3389-3402(1997).

=====

Query: 20 AA

Date run: 2005-05-03 11:01:00 UTC+0100 on sib-gml.unil.ch

Program: NCBI BLASTP 1.5.4-Paracel [2003-06-05]

Database: EXPASY/UniProtKB

1,880,849 sequences; 604,459,357 total letters

UniProt Release 4.6 consists of: Swiss-Prot Release 46.6 of 26-Apr-2005: 180652 en  
TrEMBL Release 29.6 of 26-Apr-2005: 1689375 entrie

#### List of potentially matching sequences

Send selected sequences to


☐ Include query sequence



Db AC	Description	Score	E-value
<input type="checkbox"/> tr Q5G5J6	_HELPHY Adhesin-binding fucosylated histo-blood group (F...	69	7e-12
<input type="checkbox"/> tr Q8GNY0	_HELPHY BabB (Fragment) [babB] [Helicobacter pylori (Cam...	69	7e-12
<input type="checkbox"/> tr Q8GNX9	_HELPHY BabB (Fragment) [babB] [Helicobacter pylori (Cam...	69	7e-12
<input type="checkbox"/> tr Q8GNX7	_HELPHY BabB (Fragment) [babB] [Helicobacter pylori (Cam...	69	7e-12
<input type="checkbox"/> tr Q8GNX5	_HELPHY BabB (Fragment) [babB] [Helicobacter pylori (Cam...	69	7e-12
<input type="checkbox"/> tr Q8GNX4	_HELPHY BabB (Fragment) [babB] [Helicobacter pylori (Cam...	69	7e-12
<input type="checkbox"/> tr Q8GNX3	_HELPHY BabB (Fragment) [babB] [Helicobacter pylori (Cam...	69	7e-12
<input type="checkbox"/> tr Q8GNX2	_HELPHY BabB (Fragment) [babB] [Helicobacter pylori (Cam...	69	7e-12
<input type="checkbox"/> tr Q8GNX1	_HELPHY BabB (Fragment) [babB] [Helicobacter pylori (Cam...	69	7e-12
<input type="checkbox"/> tr Q8GNW9	_HELPHY BabB (Fragment) [babB] [Helicobacter pylori (Cam...	69	7e-12

<input type="checkbox"/>	tr	<a href="#">Q8GNW8</a>	_HEL	Py	BabB (Fragment)	[babB]	[Helicobacter pylori (Cam...	<a href="#">69</a>	7e-12
<input type="checkbox"/>	tr	<a href="#">Q8GNW7</a>	_HEL	Py	BabB (Fragment)	[babB]	[Helicobacter pylori (Cam...	<a href="#">69</a>	7e-12
<input type="checkbox"/>	tr	<a href="#">Q8GNW6</a>	_HEL	Py	BabB (Fragment)	[babB]	[Helicobacter pylori (Cam...	<a href="#">69</a>	7e-12
<input type="checkbox"/>	tr	<a href="#">Q8GNW5</a>	_HEL	Py	BabB (Fragment)	[babB]	[Helicobacter pylori (Cam...	<a href="#">69</a>	7e-12
<input type="checkbox"/>	tr	<a href="#">Q8GNW4</a>	_HEL	Py	BabB (Fragment)	[babB]	[Helicobacter pylori (Cam...	<a href="#">69</a>	7e-12
<input type="checkbox"/>	tr	<a href="#">Q8GNW3</a>	_HEL	Py	BabB (Fragment)	[babB]	[Helicobacter pylori (Cam...	<a href="#">69</a>	7e-12
<input type="checkbox"/>	tr	<a href="#">Q7WVA5</a>	_HEL	Py	Adhesin-binding	fucosylated histo-blood group an...	<a href="#">69</a>	7e-12	
<input type="checkbox"/>	tr	<a href="#">Q7WVA0</a>	_HEL	Py	Adhesin-binding	fucosylated histo-blood group an...	<a href="#">69</a>	7e-12	
<input type="checkbox"/>	tr	<a href="#">Q7WV97</a>	_HEL	Py	Adhesin-binding	fucosylated histo-blood group an...	<a href="#">69</a>	7e-12	
<input type="checkbox"/>	tr	<a href="#">Q7WV96</a>	_HEL	Py	Adhesin-binding	fucosylated histo-blood group an...	<a href="#">69</a>	7e-12	
<input type="checkbox"/>	tr	<a href="#">Q7WV95</a>	_HEL	Py	Adhesin-binding	fucosylated histo-blood group an...	<a href="#">69</a>	7e-12	
<input type="checkbox"/>	tr	<a href="#">Q7WV94</a>	_HEL	Py	Adhesin-binding	fucosylated histo-blood group an...	<a href="#">69</a>	7e-12	
<input type="checkbox"/>	tr	<a href="#">Q7WV93</a>	_HEL	Py	Adhesin-binding	fucosylated histo-blood group an...	<a href="#">69</a>	7e-12	
<input type="checkbox"/>	tr	<a href="#">Q7WV92</a>	_HEL	Py	Adhesin-binding	fucosylated histo-blood group an...	<a href="#">69</a>	7e-12	
<input type="checkbox"/>	tr	<a href="#">Q7WV90</a>	_HEL	Py	Adhesin-binding	fucosylated histo-blood group an...	<a href="#">69</a>	7e-12	
<input type="checkbox"/>	tr	<a href="#">Q7WV89</a>	_HEL	Py	Adhesin-binding	fucosylated histo-blood group an...	<a href="#">69</a>	7e-12	
<input type="checkbox"/>	tr	<a href="#">Q7WV88</a>	_HEL	Py	Adhesin-binding	fucosylated histo-blood group an...	<a href="#">69</a>	7e-12	
<input type="checkbox"/>	tr	<a href="#">Q7WV87</a>	_HEL	Py	Adhesin-binding	fucosylated histo-blood group an...	<a href="#">69</a>	7e-12	
<input type="checkbox"/>	tr	<a href="#">Q7WV86</a>	_HEL	Py	Adhesin-binding	fucosylated histo-blood group an...	<a href="#">69</a>	7e-12	
<input type="checkbox"/>	tr	<a href="#">Q7WV85</a>	_HEL	Py	Adhesin-binding	fucosylated histo-blood group an...	<a href="#">69</a>	7e-12	
<input type="checkbox"/>	tr	<a href="#">Q7WV83</a>	_HEL	Py	Adhesin-binding	fucosylated histo-blood group an...	<a href="#">69</a>	7e-12	
<input type="checkbox"/>	tr	<a href="#">Q7WV82</a>	_HEL	Py	Adhesin-binding	fucosylated histo-blood group an...	<a href="#">69</a>	7e-12	
<input type="checkbox"/>	tr	<a href="#">Q7WV80</a>	_HEL	Py	Adhesin-binding	fucosylated histo-blood group an...	<a href="#">69</a>	7e-12	
<input type="checkbox"/>	tr	<a href="#">Q7WV79</a>	_HEL	Py	Adhesin-binding	fucosylated histo-blood group an...	<a href="#">69</a>	7e-12	
<input type="checkbox"/>	tr	<a href="#">Q7WV75</a>	_HEL	Py	Adhesin-binding	fucosylated histo-blood group an...	<a href="#">69</a>	7e-12	
<input type="checkbox"/>	tr	<a href="#">Q7WV70</a>	_HEL	Py	Adhesin-binding	fucosylated histo-blood group an...	<a href="#">69</a>	7e-12	
<input type="checkbox"/>	tr	<a href="#">Q7WV68</a>	_HEL	Py	Adhesin-binding	fucosylated histo-blood group an...	<a href="#">69</a>	7e-12	
<input type="checkbox"/>	tr	<a href="#">Q7WV67</a>	_HEL	Py	Adhesin-binding	fucosylated histo-blood group an...	<a href="#">69</a>	7e-12	
<input type="checkbox"/>	tr	<a href="#">Q7WV66</a>	_HEL	Py	Adhesin-binding	fucosylated histo-blood group an...	<a href="#">69</a>	7e-12	
<input type="checkbox"/>	tr	<a href="#">Q6JAA1</a>	_HEL	Py	Adhesin-binding	fucosylated histo-blood group an...	<a href="#">69</a>	7e-12	
<input type="checkbox"/>	tr	<a href="#">Q6JAA0</a>	_HEL	Py	Adhesin-binding	fucosylated histo-blood group an...	<a href="#">69</a>	7e-12	
<input type="checkbox"/>	tr	<a href="#">Q6JAA9</a>	_HEL	Py	Adhesin-binding	fucosylated histo-blood group an...	<a href="#">69</a>	7e-12	
<input type="checkbox"/>	tr	<a href="#">Q6JAA8</a>	_HEL	Py	Adhesin-binding	fucosylated histo-blood group an...	<a href="#">69</a>	7e-12	
<input type="checkbox"/>	tr	<a href="#">Q6JAA7</a>	_HEL	Py	Adhesin-binding	fucosylated histo-blood group an...	<a href="#">69</a>	7e-12	
<input type="checkbox"/>	tr	<a href="#">Q6U2D5</a>	_HEL	Py	Adhesin-binding	fucosylated histo-blood group (F...	<a href="#">67</a>	4e-11	
<input type="checkbox"/>	tr	<a href="#">Q8GNX6</a>	_HEL	Py	BabB (Fragment)	[babB]	[Helicobacter pylori (Cam...	<a href="#">66</a>	5e-11
<input type="checkbox"/>	tr	<a href="#">Q7WV98</a>	_HEL	Py	Adhesin-binding	fucosylated histo-blood group an...	<a href="#">66</a>	5e-11	
<input type="checkbox"/>	tr	<a href="#">Q8GNX8</a>	_HEL	Py	BabB (Fragment)	[babB]	[Helicobacter pylori (Cam...	<a href="#">66</a>	7e-11
<input type="checkbox"/>	tr	<a href="#">Q7WVA3</a>	_HEL	Py	Adhesin-binding	fucosylated histo-blood group an...	<a href="#">66</a>	7e-11	
<input type="checkbox"/>	tr	<a href="#">Q6U2D3</a>	_HEL	Py	Adhesin-binding	fucosylated histo-blood group (F...	<a href="#">66</a>	7e-11	
<input type="checkbox"/>	tr	<a href="#">Q7WV78</a>	_HEL	Py	Adhesin-binding	fucosylated histo-blood group an...	<a href="#">64</a>	2e-10	
<input type="checkbox"/>	tr	<a href="#">Q7WV76</a>	_HEL	Py	Adhesin-binding	fucosylated histo-blood group an...	<a href="#">64</a>	2e-10	
<input type="checkbox"/>	tr	<a href="#">Q7WV71</a>	_HEL	Py	Adhesin-binding	fucosylated histo-blood group an...	<a href="#">64</a>	2e-10	
<input type="checkbox"/>	tr	<a href="#">Q6U2C8</a>	_HEL	Py	Adhesin-binding	fucosylated histo-blood group (F...	<a href="#">63</a>	6e-10	
<input type="checkbox"/>	tr	<a href="#">Q8GNX0</a>	_HEL	Py	BabB (Fragment)	[babB]	[Helicobacter pylori (Cam...	<a href="#">62</a>	1e-09

<input type="checkbox"/>	tr	<a href="#">Q7WV91</a>	_HELPEPY	Adhesin-binding fucosylated histo-blood group an...	<a href="#">62</a>	1e-09
<input type="checkbox"/>	tr	<a href="#">Q7WV77</a>	_HELPEPY	Adhesin-binding fucosylated histo-blood group an...	<a href="#">62</a>	1e-09
<input type="checkbox"/>	tr	<a href="#">Q7WV73</a>	_HELPEPY	Adhesin-binding fucosylated histo-blood group an...	<a href="#">62</a>	1e-09
<input type="checkbox"/>	tr	<a href="#">Q7WV72</a>	_HELPEPY	Adhesin-binding fucosylated histo-blood group an...	<a href="#">62</a>	1e-09
<input type="checkbox"/>	tr	<a href="#">Q9ZKV2</a>	_HELPEJ	Outer membrane protein-adhesin [babA] [Helicobac...	<a href="#">60</a>	6e-09
<input type="checkbox"/>	tr	<a href="#">Q25840</a>	_HELPEPY	Outer membrane protein (Omp28) [HP1243] [Helicob...	<a href="#">60</a>	6e-09
<input type="checkbox"/>	tr	<a href="#">Q25556</a>	_HELPEPY	Outer membrane protein (Omp19) [HP0896] [Helicob...	<a href="#">60</a>	6e-09
<input type="checkbox"/>	tr	<a href="#">Q25086</a>	_HELPEPY	Outer membrane protein (Omp9) [HP0317] [Helicoba...	<a href="#">60</a>	6e-09
<input type="checkbox"/>	tr	<a href="#">Q8GNW2</a>	_HELPEPY	BabB (Fragment) [babB] [Helicobacter pylori (Cam...	<a href="#">60</a>	6e-09
<input type="checkbox"/>	tr	<a href="#">Q8GNW1</a>	_HELPEPY	BabB (Fragment) [babB] [Helicobacter pylori (Cam...	<a href="#">60</a>	6e-09
<input type="checkbox"/>	tr	<a href="#">Q8GNW0</a>	_HELPEPY	BabB (Fragment) [babB] [Helicobacter pylori (Cam...	<a href="#">60</a>	6e-09
<input type="checkbox"/>	tr	<a href="#">Q8GNV8</a>	_HELPEPY	BabB (Fragment) [babB] [Helicobacter pylori (Cam...	<a href="#">60</a>	6e-09
<input type="checkbox"/>	tr	<a href="#">Q8GNV7</a>	_HELPEPY	BabB (Fragment) [babB] [Helicobacter pylori (Cam...	<a href="#">60</a>	6e-09
<input type="checkbox"/>	tr	<a href="#">Q8GNV6</a>	_HELPEPY	BabB (Fragment) [babB] [Helicobacter pylori (Cam...	<a href="#">60</a>	6e-09
<input type="checkbox"/>	tr	<a href="#">Q7WVA4</a>	_HELPEPY	Adhesin-binding fucosylated histo-blood group an...	<a href="#">60</a>	6e-09
<input type="checkbox"/>	tr	<a href="#">Q7WVA2</a>	_HELPEPY	Adhesin-binding fucosylated histo-blood group an...	<a href="#">60</a>	6e-09
<input type="checkbox"/>	tr	<a href="#">Q7WVA1</a>	_HELPEPY	Adhesin-binding fucosylated histo-blood group an...	<a href="#">60</a>	6e-09
<input type="checkbox"/>	tr	<a href="#">Q7WV99</a>	_HELPEPY	Adhesin-binding fucosylated histo-blood group an...	<a href="#">60</a>	6e-09
<input type="checkbox"/>	tr	<a href="#">Q7WV84</a>	_HELPEPY	Adhesin-binding fucosylated histo-blood group an...	<a href="#">60</a>	6e-09
<input type="checkbox"/>	tr	<a href="#">Q7WV81</a>	_HELPEPY	Adhesin-binding fucosylated histo-blood group an...	<a href="#">60</a>	6e-09
<input type="checkbox"/>	tr	<a href="#">Q7WV74</a>	_HELPEPY	Adhesin-binding fucosylated histo-blood group an...	<a href="#">60</a>	6e-09
<input type="checkbox"/>	tr	<a href="#">Q7WV69</a>	_HELPEPY	Adhesin-binding fucosylated histo-blood group an...	<a href="#">60</a>	6e-09
<input type="checkbox"/>	tr	<a href="#">Q6T8D5</a>	_HELPEPY	BabB (BabB2) [Helicobacter pylori (Campylobacter...	<a href="#">60</a>	6e-09
<input type="checkbox"/>	tr	<a href="#">Q6T8D3</a>	_HELPEPY	BabA [Helicobacter pylori (Campylobacter pylori)]	<a href="#">60</a>	6e-09
<input type="checkbox"/>	tr	<a href="#">Q5Q1P2</a>	_HELPEPY	BabB/BabA1 fusion protein 1 (Fragment) [babB/bab...	<a href="#">60</a>	6e-09
<input type="checkbox"/>	tr	<a href="#">Q5Q1P1</a>	_HELPEPY	BabB/BabA1 fusion protein 2 (Fragment) [babB/bab...	<a href="#">60</a>	6e-09
<input type="checkbox"/>	tr	<a href="#">Q52269</a>	_HELPEPY	Adhesin binding fucosylated histo-blood group an...	<a href="#">60</a>	6e-09
<input type="checkbox"/>	tr	<a href="#">Q51811</a>	_HELPEPY	Adhesin-binding fucosylated histo-blood group an...	<a href="#">60</a>	6e-09
<input type="checkbox"/>	tr	<a href="#">Q9ZN51</a>	_HELPEJ	Putative Outer membrane protein [JHP0007] [Helic...	<a href="#">58</a>	1e-08
<input type="checkbox"/>	tr	<a href="#">Q9X748</a>	_HELPEPY	HopZ protein precursor [hopZ] [Helicobacter pylo...	<a href="#">58</a>	1e-08
<input type="checkbox"/>	tr	<a href="#">Q9X747</a>	_HELPEPY	HopZ protein precursor [hopZ] [Helicobacter pylo...	<a href="#">58</a>	1e-08
<input type="checkbox"/>	tr	<a href="#">Q9X746</a>	_HELPEPY	HopZ protein precursor [hopZ] [Helicobacter pylo...	<a href="#">58</a>	1e-08
<input type="checkbox"/>	tr	<a href="#">Q9X745</a>	_HELPEPY	HopZ protein precursor [hopZ] [Helicobacter pylo...	<a href="#">58</a>	1e-08
<input type="checkbox"/>	tr	<a href="#">Q9S317</a>	_HELPEPY	HopZ protein precursor [hopZ] [Helicobacter pylo...	<a href="#">58</a>	1e-08
<input type="checkbox"/>	tr	<a href="#">Q7X2J7</a>	_HELPEPY	HopZ (Fragment) [hopZ] [Helicobacter pylori (Cam...	<a href="#">58</a>	1e-08
<input type="checkbox"/>	tr	<a href="#">Q9Z390</a>	_HELPEJ	Putative Outer membrane protein [JHP0212] [Helic...	<a href="#">57</a>	4e-08
<input type="checkbox"/>	tr	<a href="#">Q5G5J5</a>	_HELPEPY	Adhesin-binding fucosylated histo-blood group (F...	<a href="#">57</a>	4e-08
<input type="checkbox"/>	tr	<a href="#">Q6U2C5</a>	_HELPEPY	Adhesin-binding fucosylated histo-blood group (F...	<a href="#">57</a>	4e-08
<input type="checkbox"/>	tr	<a href="#">Q9ZMK5</a>	_HELPEJ	Outer membrane protein/porin [hopA] [Helicobacte...	<a href="#">56</a>	6e-08
<input type="checkbox"/>	tr	<a href="#">Q9ZN38</a>	_HELPEJ	Putative Outer membrane protein [JHP0021] [Helic...	<a href="#">56</a>	8e-08
<input type="checkbox"/>	tr	<a href="#">Q24870</a>	_HELPEPY	Outer membrane protein (Omp2) [HP0025] [Helicoba...	<a href="#">56</a>	8e-08
<input type="checkbox"/>	tr	<a href="#">Q9ZLC1</a>	_HELPEJ	Putative Outer membrane protein [JHP0659] [Helic...	<a href="#">55</a>	2e-07
<input type="checkbox"/>	tr	<a href="#">Q9ZLB8</a>	_HELPEJ	Putative Outer membrane protein [JHP0662] [Helic...	<a href="#">55</a>	2e-07
<input type="checkbox"/>	tr	<a href="#">Q7X2K7</a>	_HELPEPY	SabA (Fragment) [sabA] [Helicobacter pylori (Cam...	<a href="#">55</a>	2e-07
<input type="checkbox"/>	tr	<a href="#">Q7X2K6</a>	_HELPEPY	SabA (Fragment) [sabA] [Helicobacter pylori (Cam...	<a href="#">55</a>	2e-07

**Graphical overview of the alignments**

[Click here](#) to resubmit your query after masking regions matching PROSITE profiles or Pfam HMMs  
( [Help](#)) (use ScanProsite for more details about PROSITE matches)

**Profile hits**   
**Pfam hits** 



Submission	Matches on query sequence	Mat
	1	1
Q5G5J6		
Q8GNY8		
Q8GNX9		
Q8GNX7		
Q8GNX5		
Q8GNX4		
Q8GNX3		
Q8GNX2		
Q8GNX1		
Q8GNH9		
Q8GNH8		
Q8GNH7		
Q8GNH6		
Q8GNH5		
Q8GNH4		
Q8GNH3		
Q7HVA5		
Q7HVA8		
Q7HV97		
Q7HV96		
Q7HV95		
Q7HV94		
Q7HV93		
Q7HV92		
Q7HV90		
Q7HV89		
Q7HV88		
Q7HV87		
Q7HV86		
Q7HV85		
Q7HV83		
Q7HV82		
Q7HV80		
Q7HV79		
Q7HV75		
Q7HV70		
Q7HV68		
Q7HV67		
Q7HV66		
Q6JAA1		
Q6JAA0		
Q6JA99		
Q6JA98		
Q6JA97		
Q6U2D5		
Q8GNX6		
Q7HV98		
Q8GNX8		
Q7HVA3		
Q6U2D3		
Q7HV78		
Q7HV76		
Q7HV71		
Q6U2C8		
Q8GNX0		
Q7HV91		
Q7HV77		
Q7HV73		
Q7HV72		
Q9ZKV2		
O25840		
O25556		
O25086		
Q8GNH2		
Q8GNH1		
Q8GNH0		
Q8GNV8		
Q8GNV7		
Q8GNV6		
Q7HVA4		
Q7HVA2		
Q7HVA1		
Q7HV99		
Q7HV84		
Q7HV81		
Q7HV74		
Q7HV69		
Q6T8D5		
Q6T8D3		
Q5Q1P2		
Q5Q1P1		
O52269		
O51811		
Q9ZH51		
Q9X748		
Q9X747		

## Alignments

tr Q5G5J6 Adhesin-binding fucosylated histo-blood group (Fragment) 138  
Q5G5J6\_HELPY [babB] AA  
[Helicobacter pylori (Campylobacter pylori)] [align](#)

Score = 69.4 bits (156), Expect = 7e-12  
Identities = 20/20 (100%), Positives = 20/20 (100%)

Query: 1 EDDGFYMSAGYQIGEEAQM 20  
EDDGFYMSAGYQIGEEAQM  
Sbjct: 8 EDDGFYMSAGYQIGEEAQM 27

tr Q8GNY0 BabB (Fragment) [babB] [Helicobacter pylori] 130  
Q8GNY0\_HELPY (Campylobacter  
pylori)] AA  
[align](#)

Score = 69.4 bits (156), Expect = 7e-12  
Identities = 20/20 (100%), Positives = 20/20 (100%)

Query: 1 EDDGFYMSAGYQIGEEAQM 20  
EDDGFYMSAGYQIGEEAQM  
Sbjct: 6 EDDGFYMSAGYQIGEEAQM 25

tr Q8GNX9 BabB (Fragment) [babB] [Helicobacter pylori] 135  
Q8GNX9\_HELPY (Campylobacter  
pylori)] AA  
[align](#)

Score = 69.4 bits (156), Expect = 7e-12  
Identities = 20/20 (100%), Positives = 20/20 (100%)

Query: 1 EDDGFYMSAGYQIGEEAQM 20  
EDDGFYMSAGYQIGEEAQM  
Sbjct: 11 EDDGFYMSAGYQIGEEAQM 30

tr Q8GNX7 BabB (Fragment) [babB] [Helicobacter pylori] 135  
Q8GNX7\_HELPY (Campylobacter  
pylori)] AA  
[align](#)

Score = 69.4 bits (156), Expect = 7e-12  
Identities = 20/20 (100%), Positives = 20/20 (100%)

Query: 1 EDDGFYMSAGYQIGEEAQM 20  
EDDGFYMSAGYQIGEEAQM  
Sbjct: 11 EDDGFYMSAGYQIGEEAQM 30

tr Q8GNX5 BabB (Fragment) [babB] [Helicobacter pylori] 135  
Q8GNX5\_HELPY (Campylobacter AA  
pylori)] align

Score = 69.4 bits (156), Expect = 7e-12  
Identities = 20/20 (100%), Positives = 20/20 (100%)

Query: 1 EDDGFYMSAGYQIGEEAAQMV 20  
EDDGFYMSAGYQIGEEAAQMV  
Sbjct: 11 EDDGFYMSAGYQIGEEAAQMV 30

tr Q8GNX4 BabB (Fragment) [babB] [Helicobacter pylori] 135  
Q8GNX4\_HELPY (Campylobacter AA  
pylori)] align

Score = 69.4 bits (156), Expect = 7e-12  
Identities = 20/20 (100%), Positives = 20/20 (100%)

Query: 1 EDDGFYMSAGYQIGEEAAQMV 20  
EDDGFYMSAGYQIGEEAAQMV  
Sbjct: 11 EDDGFYMSAGYQIGEEAAQMV 30

tr Q8GNX3 BabB (Fragment) [babB] [Helicobacter pylori] 135  
Q8GNX3\_HELPY (Campylobacter AA  
pylori)] align

Score = 69.4 bits (156), Expect = 7e-12  
Identities = 20/20 (100%), Positives = 20/20 (100%)

Query: 1 EDDGFYMSAGYQIGEEAAQMV 20  
EDDGFYMSAGYQIGEEAAQMV  
Sbjct: 11 EDDGFYMSAGYQIGEEAAQMV 30

tr Q8GNX2 BabB (Fragment) [babB] [Helicobacter pylori] 135  
Q8GNX2\_HELPY (Campylobacter AA  
pylori)] align

Score = 69.4 bits (156), Expect = 7e-12  
Identities = 20/20 (100%), Positives = 20/20 (100%)

Query: 1 EDDGFYMSAGYQIGEEAAQMV 20  
EDDGFYMSAGYQIGEEAAQMV  
Sbjct: 11 EDDGFYMSAGYQIGEEAAQMV 30

tr Q8GNX1 BabB (Fragment) [babB] [Helicobacter pylori] 135  
Q8GNX1\_HELPY (Campylobacter AA  
pylori)] align

Score = 69.4 bits (156), Expect = 7e-12  
Identities = 20/20 (100%), Positives = 20/20 (100%)

Query: 1 EDDGFYMSAGYQIGEEAAQMV 20  
EDDGFYMSAGYQIGEEAAQMV  
Sbjct: 11 EDDGFYMSAGYQIGEEAAQMV 30

tr Q8GNW9 BabB (Fragment) [babB] [Helicobacter pylori] 135  
Q8GNW9\_HELPY (Campylobacter AA  
pylori)] align

Score = 69.4 bits (156), Expect = 7e-12  
Identities = 20/20 (100%), Positives = 20/20 (100%)

Query: 1 EDDGFYMSAGYQIGEEAAQMV 20  
EDDGFYMSAGYQIGEEAAQMV  
Sbjct: 11 EDDGFYMSAGYQIGEEAAQMV 30

tr Q8GNW8 BabB (Fragment) [babB] [Helicobacter pylori] 135  
Q8GNW8\_HELPY (Campylobacter AA  
pylori)] align

Score = 69.4 bits (156), Expect = 7e-12  
Identities = 20/20 (100%), Positives = 20/20 (100%)

Query: 1 EDDGFYMSAGYQIGEEAAQMV 20  
EDDGFYMSAGYQIGEEAAQMV  
Sbjct: 11 EDDGFYMSAGYQIGEEAAQMV 30

tr Q8GNW7 BabB (Fragment) [babB] [Helicobacter pylori] 135  
Q8GNW7\_HELPY (Campylobacter AA  
pylori)] align

Score = 69.4 bits (156), Expect = 7e-12  
Identities = 20/20 (100%), Positives = 20/20 (100%)

Query: 1 EDDGFYMSAGYQIGEEAAQMV 20  
EDDGFYMSAGYQIGEEAAQMV  
Sbjct: 11 EDDGFYMSAGYQIGEEAAQMV 30

tr Q8GNW6 BabB (Fragment) [babB] [Helicobacter pylori] 135  
Q8GNW6\_HELPY (Campylobacter AA  
pylori)] align

Score = 69.4 bits (156), Expect = 7e-12  
Identities = 20/20 (100%), Positives = 20/20 (100%)

Query: 1 EDDGFYMSAGYQIGEEAAQMV 20  
EDDGFYMSAGYQIGEEAAQMV  
Sbjct: 11 EDDGFYMSAGYQIGEEAAQMV 30

tr Q8GNW5 BabB (Fragment) [babB] [Helicobacter pylori] 135  
Q8GNW5\_HELPY (Campylobacter  
pylori)] AA  
align

Score = 69.4 bits (156), Expect = 7e-12  
Identities = 20/20 (100%), Positives = 20/20 (100%)

Query: 1 EDDGFYMSAGYQIGEEAAQMV 20  
EDDGFYMSAGYQIGEEAAQMV  
Sbjct: 11 EDDGFYMSAGYQIGEEAAQMV 30

tr Q8GNW4 BabB (Fragment) [babB] [Helicobacter pylori] 137  
Q8GNW4\_HELPY (Campylobacter  
pylori)] AA  
align

Score = 69.4 bits (156), Expect = 7e-12  
Identities = 20/20 (100%), Positives = 20/20 (100%)

Query: 1 EDDGFYMSAGYQIGEEAAQMV 20  
EDDGFYMSAGYQIGEEAAQMV  
Sbjct: 13 EDDGFYMSAGYQIGEEAAQMV 32

tr Q8GNW3 BabB (Fragment) [babB] [Helicobacter pylori] 135  
Q8GNW3\_HELPY (Campylobacter  
pylori)] AA  
align

Score = 69.4 bits (156), Expect = 7e-12  
Identities = 20/20 (100%), Positives = 20/20 (100%)

Query: 1 EDDGFYMSAGYQIGEEAAQMV 20  
EDDGFYMSAGYQIGEEAAQMV  
Sbjct: 11 EDDGFYMSAGYQIGEEAAQMV 30

tr Q7WVA5 Adhesin-binding fucosylated histo-blood group antigen 694  
Q7WVA5\_HELPY (Fragment) AA  
[babB] [Helicobacter pylori (Campylobacter pylori)] align

Score = 69.4 bits (156), Expect = 7e-12  
Identities = 20/20 (100%), Positives = 20/20 (100%)

Query: 1 EDDGFYMSAGYQIGEEAAQMV 20  
EDDGFYMSAGYQIGEEAAQMV  
Sbjct: 11 EDDGFYMSAGYQIGEEAAQMV 30

tr Q7WVA0 Adhesin-binding fucosylated histo-blood group antigen 696  
Q7WVA0\_HELPY (Fragment) AA  
[babB] [Helicobacter pylori (Campylobacter pylori)] [align](#)

Score = 69.4 bits (156), Expect = 7e-12  
Identities = 20/20 (100%), Positives = 20/20 (100%)

Query: 1 EDDGFYMSAGYQIGEEAQMV 20  
EDDGFYMSAGYQIGEEAQMV  
Sbjct: 13 EDDGFYMSAGYQIGEEAQMV 32

tr Q7WV97 Adhesin-binding fucosylated histo-blood group antigen 694  
Q7WV97\_HELPY (Fragment) AA  
[babB] [Helicobacter pylori (Campylobacter pylori)] [align](#)

Score = 69.4 bits (156), Expect = 7e-12  
Identities = 20/20 (100%), Positives = 20/20 (100%)

Query: 1 EDDGFYMSAGYQIGEEAQMV 20  
EDDGFYMSAGYQIGEEAQMV  
Sbjct: 11 EDDGFYMSAGYQIGEEAQMV 30

tr Q7WV96 Adhesin-binding fucosylated histo-blood group antigen 694  
Q7WV96\_HELPY (Fragment) AA  
[babB] [Helicobacter pylori (Campylobacter pylori)] [align](#)

Score = 69.4 bits (156), Expect = 7e-12  
Identities = 20/20 (100%), Positives = 20/20 (100%)

Query: 1 EDDGFYMSAGYQIGEEAQMV 20  
EDDGFYMSAGYQIGEEAQMV  
Sbjct: 11 EDDGFYMSAGYQIGEEAQMV 30

tr Q7WV95 Adhesin-binding fucosylated histo-blood group antigen 695  
Q7WV95\_HELPY (Fragment) AA  
[babB] [Helicobacter pylori (Campylobacter pylori)] [align](#)

Score = 69.4 bits (156), Expect = 7e-12  
Identities = 20/20 (100%), Positives = 20/20 (100%)

Query: 1 EDDGFYMSAGYQIGEEAQMV 20  
EDDGFYMSAGYQIGEEAQMV  
Sbjct: 12 EDDGFYMSAGYQIGEEAQMV 31

tr Q7WV94 Adhesin-binding fucosylated histo-blood group antigen 695  
Q7WV94\_HELPY (Fragment) AA  
[babB] [Helicobacter pylori (Campylobacter pylori)] align

Score = 69.4 bits (156), Expect = 7e-12  
Identities = 20/20 (100%), Positives = 20/20 (100%)

Query: 1 EDDGFYMSAGYQIGEEAAQMV 20  
EDDGFYMSAGYQIGEEAAQMV  
Sbjct: 12 EDDGFYMSAGYQIGEEAAQMV 31

tr Q7WV93 Adhesin-binding fucosylated histo-blood group antigen 694  
Q7WV93\_HELPY (Fragment) AA  
[babB] [Helicobacter pylori (Campylobacter pylori)] align

Score = 69.4 bits (156), Expect = 7e-12  
Identities = 20/20 (100%), Positives = 20/20 (100%)

Query: 1 EDDGFYMSAGYQIGEEAAQMV 20  
EDDGFYMSAGYQIGEEAAQMV  
Sbjct: 11 EDDGFYMSAGYQIGEEAAQMV 30

tr Q7WV92 Adhesin-binding fucosylated histo-blood group antigen 694  
Q7WV92\_HELPY (Fragment) AA  
[babB] [Helicobacter pylori (Campylobacter pylori)] align

Score = 69.4 bits (156), Expect = 7e-12  
Identities = 20/20 (100%), Positives = 20/20 (100%)

Query: 1 EDDGFYMSAGYQIGEEAAQMV 20  
EDDGFYMSAGYQIGEEAAQMV  
Sbjct: 11 EDDGFYMSAGYQIGEEAAQMV 30

tr Q7WV90 Adhesin-binding fucosylated histo-blood group antigen 697  
Q7WV90\_HELPY (Fragment) AA  
[babB] [Helicobacter pylori (Campylobacter pylori)] align

Score = 69.4 bits (156), Expect = 7e-12  
Identities = 20/20 (100%), Positives = 20/20 (100%)

Query: 1 EDDGFYMSAGYQIGEEAAQMV 20  
EDDGFYMSAGYQIGEEAAQMV  
Sbjct: 13 EDDGFYMSAGYQIGEEAAQMV 32

tr Q7WV89 Adhesin-binding fucosylated histo-blood group antigen 697  
Q7WV89\_HELPY (Fragment) AA  
[babB] [Helicobacter pylori (Campylobacter pylori)] align

Score = 69.4 bits (156), Expect = 7e-12  
Identities = 20/20 (100%), Positives = 20/20 (100%)

Query: 1 EDDGFYMSAGYQIGEEAAQMV 20  
EDDGFYMSAGYQIGEEAAQMV  
Sbjct: 13 EDDGFYMSAGYQIGEEAAQMV 32

tr [Q7WV88](#) Adhesin-binding fucosylated histo-blood group antigen 696  
Q7WV88\_HELPY (Fragment) AA  
[babB] [Helicobacter pylori (Campylobacter pylori)] [align](#)

Score = 69.4 bits (156), Expect = 7e-12  
Identities = 20/20 (100%), Positives = 20/20 (100%)

Query: 1 EDDGFYMSAGYQIGEEAAQMV 20  
EDDGFYMSAGYQIGEEAAQMV  
Sbjct: 13 EDDGFYMSAGYQIGEEAAQMV 32

tr [Q7WV87](#) Adhesin-binding fucosylated histo-blood group antigen 694  
Q7WV87\_HELPY (Fragment) AA  
[babB] [Helicobacter pylori (Campylobacter pylori)] [align](#)

Score = 69.4 bits (156), Expect = 7e-12  
Identities = 20/20 (100%), Positives = 20/20 (100%)

Query: 1 EDDGFYMSAGYQIGEEAAQMV 20  
EDDGFYMSAGYQIGEEAAQMV  
Sbjct: 11 EDDGFYMSAGYQIGEEAAQMV 30

tr [Q7WV86](#) Adhesin-binding fucosylated histo-blood group antigen 704  
Q7WV86\_HELPY (Fragment) AA  
[babB] [Helicobacter pylori (Campylobacter pylori)] [align](#)

Score = 69.4 bits (156), Expect = 7e-12  
Identities = 20/20 (100%), Positives = 20/20 (100%)

Query: 1 EDDGFYMSAGYQIGEEAAQMV 20  
EDDGFYMSAGYQIGEEAAQMV  
Sbjct: 21 EDDGFYMSAGYQIGEEAAQMV 40

tr [Q7WV85](#) Adhesin-binding fucosylated histo-blood group antigen 732  
Q7WV85\_HELPY (Fragment) AA  
[babB] [Helicobacter pylori (Campylobacter pylori)] [align](#)

Score = 69.4 bits (156), Expect = 7e-12  
Identities = 20/20 (100%), Positives = 20/20 (100%)



Query: 1 EDDGFYMSAGYQIGEEAAQMV 20  
EDDGFYMSAGYQIGEEAAQMV  
Sbjct: 21 EDDGFYMSAGYQIGEEAAQMV 40

tr Q7WV83 Adhesin-binding fucosylated histo-blood group antigen 737  
Q7WV83\_HELPY (Fragment) AA  
[babB] [Helicobacter pylori (Campylobacter pylori)] align

Score = 69.4 bits (156), Expect = 7e-12  
Identities = 20/20 (100%), Positives = 20/20 (100%)

Query: 1 EDDGFYMSAGYQIGEEAAQMV 20  
EDDGFYMSAGYQIGEEAAQMV  
Sbjct: 21 EDDGFYMSAGYQIGEEAAQMV 40

tr Q7WV82 Adhesin-binding fucosylated histo-blood group antigen 732  
Q7WV82\_HELPY (Fragment) AA  
[babB] [Helicobacter pylori (Campylobacter pylori)] align

Score = 69.4 bits (156), Expect = 7e-12  
Identities = 20/20 (100%), Positives = 20/20 (100%)

Query: 1 EDDGFYMSAGYQIGEEAAQMV 20  
EDDGFYMSAGYQIGEEAAQMV  
Sbjct: 21 EDDGFYMSAGYQIGEEAAQMV 40

tr Q7WV80 Adhesin-binding fucosylated histo-blood group antigen 736  
Q7WV80\_HELPY (Fragment) AA  
[babB] [Helicobacter pylori (Campylobacter pylori)] align

Score = 69.4 bits (156), Expect = 7e-12  
Identities = 20/20 (100%), Positives = 20/20 (100%)

Query: 1 EDDGFYMSAGYQIGEEAAQMV 20  
EDDGFYMSAGYQIGEEAAQMV  
Sbjct: 21 EDDGFYMSAGYQIGEEAAQMV 40

tr Q7WV79 Adhesin-binding fucosylated histo-blood group antigen 739  
Q7WV79\_HELPY (Fragment) AA  
[babB] [Helicobacter pylori (Campylobacter pylori)] align

Score = 69.4 bits (156), Expect = 7e-12  
Identities = 20/20 (100%), Positives = 20/20 (100%)

Query: 1 EDDGFYMSAGYQIGEEAAQMV 20  
EDDGFYMSAGYQIGEEAAQMV  
Sbjct: 21 EDDGFYMSAGYQIGEEAAQMV 40

tr Q7WV75 Adhesin-binding fucosylated histo-blood group antigen 738  
Q7WV75\_HELPY (Fragment) AA  
[babB] [Helicobacter pylori (Campylobacter pylori)] [align](#)

Score = 69.4 bits (156), Expect = 7e-12  
Identities = 20/20 (100%), Positives = 20/20 (100%)

Query: 1 EDDGFYMSAGYQIGEEAQMV 20  
EDDGFYMSAGYQIGEEAQMV  
Sbjct: 21 EDDGFYMSAGYQIGEEAQMV 40

tr Q7WV70 Adhesin-binding fucosylated histo-blood group antigen 733  
Q7WV70\_HELPY (Fragment) AA  
[babB] [Helicobacter pylori (Campylobacter pylori)] [align](#)

Score = 69.4 bits (156), Expect = 7e-12  
Identities = 20/20 (100%), Positives = 20/20 (100%)

Query: 1 EDDGFYMSAGYQIGEEAQMV 20  
EDDGFYMSAGYQIGEEAQMV  
Sbjct: 21 EDDGFYMSAGYQIGEEAQMV 40

tr Q7WV68 Adhesin-binding fucosylated histo-blood group antigen 733  
Q7WV68\_HELPY (Fragment) AA  
[babB] [Helicobacter pylori (Campylobacter pylori)] [align](#)

Score = 69.4 bits (156), Expect = 7e-12  
Identities = 20/20 (100%), Positives = 20/20 (100%)

Query: 1 EDDGFYMSAGYQIGEEAQMV 20  
EDDGFYMSAGYQIGEEAQMV  
Sbjct: 21 EDDGFYMSAGYQIGEEAQMV 40

tr Q7WV67 Adhesin-binding fucosylated histo-blood group antigen 734  
Q7WV67\_HELPY (Fragment) AA  
[babB] [Helicobacter pylori (Campylobacter pylori)] [align](#)

Score = 69.4 bits (156), Expect = 7e-12  
Identities = 20/20 (100%), Positives = 20/20 (100%)

Query: 1 EDDGFYMSAGYQIGEEAQMV 20  
EDDGFYMSAGYQIGEEAQMV  
Sbjct: 21 EDDGFYMSAGYQIGEEAQMV 40

tr Q7WV66 Adhesin-binding fucosylated histo-blood group antigen 739  
Q7WV66\_HELPY (Fragment) AA  
[babB] [Helicobacter pylori (Campylobacter pylori)] align

Score = 69.4 bits (156), Expect = 7e-12  
Identities = 20/20 (100%), Positives = 20/20 (100%)

Query: 1 EDDGFYMSAGYQIGEEAQM 20  
EDDGFYMSAGYQIGEEAQM  
Sbjct: 21 EDDGFYMSAGYQIGEEAQM 40

tr Q6JAA1 Adhesin-binding fucosylated histo-blood group antigen 742  
Q6JAA1\_HELPY [babA] AA  
[Helicobacter pylori (Campylobacter pylori)] align

Score = 69.4 bits (156), Expect = 7e-12  
Identities = 20/20 (100%), Positives = 20/20 (100%)

Query: 1 EDDGFYMSAGYQIGEEAQM 20  
EDDGFYMSAGYQIGEEAQM  
Sbjct: 21 EDDGFYMSAGYQIGEEAQM 40

tr Q6JAA0 Adhesin-binding fucosylated histo-blood group antigen 737  
Q6JAA0\_HELPY [babA] AA  
[Helicobacter pylori (Campylobacter pylori)] align

Score = 69.4 bits (156), Expect = 7e-12  
Identities = 20/20 (100%), Positives = 20/20 (100%)

Query: 1 EDDGFYMSAGYQIGEEAQM 20  
EDDGFYMSAGYQIGEEAQM  
Sbjct: 21 EDDGFYMSAGYQIGEEAQM 40

tr Q6JA99 Adhesin-binding fucosylated histo-blood group antigen 741  
Q6JA99\_HELPY [babA] AA  
[Helicobacter pylori (Campylobacter pylori)] align

Score = 69.4 bits (156), Expect = 7e-12  
Identities = 20/20 (100%), Positives = 20/20 (100%)

Query: 1 EDDGFYMSAGYQIGEEAQM 20  
EDDGFYMSAGYQIGEEAQM  
Sbjct: 21 EDDGFYMSAGYQIGEEAQM 40

tr Q6JA98 Adhesin-binding fucosylated histo-blood group antigen 740  
Q6JA98\_HELPY [babA] AA  
[Helicobacter pylori (Campylobacter pylori)] align

Score = 69.4 bits (156), Expect = 7e-12  
Identities = 20/20 (100%), Positives = 20/20 (100%)

Query: 1 EDDGFYMSAGYQIGEEAAQMV 20  
EDDGFYMSAGYQIGEEAAQMV  
Sbjct: 21 EDDGFYMSAGYQIGEEAAQMV 40

tr Q6JA97 Adhesin-binding fucosylated histo-blood group antigen 742  
Q6JA97\_HELPY [babA] AA  
[Helicobacter pylori (Campylobacter pylori)] [align](#)

Score = 69.4 bits (156), Expect = 7e-12  
Identities = 20/20 (100%), Positives = 20/20 (100%)

Query: 1 EDDGFYMSAGYQIGEEAAQMV 20  
EDDGFYMSAGYQIGEEAAQMV  
Sbjct: 19 EDDGFYMSAGYQIGEEAAQMV 38

tr Q6U2D5 Adhesin-binding fucosylated histo-blood group (Fragment) 137  
Q6U2D5\_HELPY [babB] AA  
[Helicobacter pylori (Campylobacter pylori)] [align](#)

Score = 66.8 bits (150), Expect = 4e-11  
Identities = 19/20 (95%), Positives = 20/20 (100%)

Query: 1 EDDGFYMSAGYQIGEEAAQMV 20  
ED+GFYMSAGYQIGEEAAQMV  
Sbjct: 9 EDEGFYMSAGYQIGEEAAQMV 28

tr Q8GNX6 BabB (Fragment) [babB] [Helicobacter pylori 135  
Q8GNX6\_HELPY (Campylobacter  
pylori)] AA  
[align](#)

Score = 66.4 bits (149), Expect = 5e-11  
Identities = 19/20 (95%), Positives = 19/20 (95%)

Query: 1 EDDGFYMSAGYQIGEEAAQMV 20  
EDDGFYMS GYQIGEEAAQMV  
Sbjct: 11 EDDGFYMSTGYQIGEEAAQMV 30

tr Q7WV98 Adhesin-binding fucosylated histo-blood group antigen 694  
Q7WV98\_HELPY (Fragment) AA  
[babB] [Helicobacter pylori (Campylobacter pylori)] [align](#)

Score = 66.4 bits (149), Expect = 5e-11  
Identities = 19/20 (95%), Positives = 19/20 (95%)

Query: 1 EDDGFYMSAGYQIGEEAQM 20  
EDDGFYMS GYQIGEEAQM  
Sbjct: 11 EDDGFYMSTGYQIGEEAQM 30

tr Q8GNX8 BabB (Fragment) [babB] [Helicobacter pylori] 135  
Q8GNX8\_HELPY (Campylobacter  
pylori)] AA  
align

Score = 66.0 bits (148), Expect = 7e-11  
Identities = 19/20 (95%), Positives = 19/20 (95%)

Query: 1 EDDGFYMSAGYQIGEEAQM 20  
EDDGFYMSAGYQIGE AQMV  
Sbjct: 11 EDDGFYMSAGYQIGEEAQM 30

tr Q7WVA3 Adhesin-binding fucosylated histo-blood group antigen 694  
Q7WVA3\_HELPY (Fragment) AA  
[babB] [Helicobacter pylori (Campylobacter pylori)] align

Score = 66.0 bits (148), Expect = 7e-11  
Identities = 19/20 (95%), Positives = 19/20 (95%)

Query: 1 EDDGFYMSAGYQIGEEAQM 20  
EDDGFYMSAGYQIGE AQMV  
Sbjct: 11 EDDGFYMSAGYQIGEEAQM 30

tr Q6U2D3 Adhesin-binding fucosylated histo-blood group (Fragment) 143  
Q6U2D3\_HELPY [babB] AA  
[Helicobacter pylori (Campylobacter pylori)] align

Score = 66.0 bits (148), Expect = 7e-11  
Identities = 19/20 (95%), Positives = 19/20 (95%)

Query: 1 EDDGFYMSAGYQIGEEAQM 20  
EDDGFYMSAGYQIGE AQMV  
Sbjct: 11 EDDGFYMSAGYQIGEEAQM 30

tr Q7WV78 Adhesin-binding fucosylated histo-blood group antigen 734  
Q7WV78\_HELPY (Fragment) AA  
[babB] [Helicobacter pylori (Campylobacter pylori)] align

Score = 64.3 bits (144), Expect = 2e-10  
Identities = 19/20 (95%), Positives = 19/20 (95%)

Query: 1 EDDGFYMSAGYQIGEEAQM 20  
EDDGFYMSAGYQIGEEA Q V  
Sbjct: 21 EDDGFYMSAGYQIGEEA QVV 40

tr Q7WV76 Adhesin-binding fucosylated histo-blood group antigen 737  
Q7WV76\_HELPY (Fragment) AA  
[babB] [Helicobacter pylori (Campylobacter pylori)] align

Score = 64.3 bits (144), Expect = 2e-10  
Identities = 19/20 (95%), Positives = 19/20 (95%)

Query: 1 EDDGFYMSAGYQIGEEAQM V 20  
EDDGFYMSAGYQIGEEAQM V  
Sbjct: 21 EDDGFYMSAGYQIGEEAQM V 40

tr Q7WV71 Adhesin-binding fucosylated histo-blood group antigen 734  
Q7WV71\_HELPY (Fragment) AA  
[babB] [Helicobacter pylori (Campylobacter pylori)] align

Score = 64.3 bits (144), Expect = 2e-10  
Identities = 19/20 (95%), Positives = 19/20 (95%)

Query: 1 EDDGFYMSAGYQIGEEAQM V 20  
EDDGFYMSAGYQIGEEAQM V  
Sbjct: 21 EDDGFYMSAGYQIGEEAQM V 40

tr Q6U2C8 Adhesin-binding fucosylated histo-blood group (Fragment) 143  
Q6U2C8\_HELPY [babB] AA  
[Helicobacter pylori (Campylobacter pylori)] align

Score = 63.0 bits (141), Expect = 6e-10  
Identities = 19/20 (95%), Positives = 19/20 (95%)

Query: 1 EDDGFYMSAGYQIGEEAQM V 20  
EDDGFYMSAGYQIGEEAQM V  
Sbjct: 11 EDDGFYMSAGYQIGEEAQM V 30

tr Q8GNX0 BabB (Fragment) [babB] [Helicobacter pylori] 135  
Q8GNX0\_HELPY (Campylobacter AA  
pylori)] align

Score = 61.7 bits (138), Expect = 1e-09  
Identities = 18/20 (90%), Positives = 18/20 (90%)

Query: 1 EDDGFYMSAGYQIGEEAQM V 20  
EDDGFYMSAGYQIGEEAQM V  
Sbjct: 11 EDDGFYMSAGYQIGEEAQM V 30

tr Q7WV91 Adhesin-binding fucosylated histo-blood group antigen 696  
Q7WV91\_HELPY (Fragment) AA  
[babB] [Helicobacter pylori (Campylobacter pylori)] align

Score = 61.7 bits (138), Expect = 1e-09  
Identities = 18/20 (90%), Positives = 18/20 (90%)

Query: 1 EDDGFYMSAGYQIGEEAAQMV 20  
EDDGFYMSAGYQIGEA Q V  
Sbjct: 13 EDDGFYMSAGYQIGEASQVV 32

tr Q7WV77 Adhesin-binding fucosylated histo-blood group antigen 734  
Q7WV77\_HELPY (Fragment) AA  
[babB] [Helicobacter pylori (Campylobacter pylori)] align

Score = 61.7 bits (138), Expect = 1e-09  
Identities = 18/20 (90%), Positives = 18/20 (90%)

Query: 1 EDDGFYMSAGYQIGEEAAQMV 20  
EDDGFYMSAGYQIGEA Q V  
Sbjct: 21 EDDGFYMSAGYQIGEASQVV 40

tr Q7WV73 Adhesin-binding fucosylated histo-blood group antigen 736  
Q7WV73\_HELPY (Fragment) AA  
[babB] [Helicobacter pylori (Campylobacter pylori)] align

Score = 61.7 bits (138), Expect = 1e-09  
Identities = 18/20 (90%), Positives = 18/20 (90%)

Query: 1 EDDGFYMSAGYQIGEEAAQMV 20  
EDDGFYMSAGYQIGEA Q V  
Sbjct: 21 EDDGFYMSAGYQIGEASQVV 40

tr Q7WV72 Adhesin-binding fucosylated histo-blood group antigen 734  
Q7WV72\_HELPY (Fragment) AA  
[babB] [Helicobacter pylori (Campylobacter pylori)] align

Score = 61.7 bits (138), Expect = 1e-09  
Identities = 18/20 (90%), Positives = 18/20 (90%)

Query: 1 EDDGFYMSAGYQIGEEAAQMV 20  
EDDGFYMSAGYQIGEA Q V  
Sbjct: 21 EDDGFYMSAGYQIGEASQVV 40

tr Q9ZKV2 Outer membrane protein-adhesin [babA] [Helicobacter 744  
Q9ZKV2\_HELPY pylori J99 AA  
(Campylobacter pylori J99)] align

Score = 59.6 bits (133), Expect = 6e-09  
Identities = 18/20 (90%), Positives = 18/20 (90%)

Query: 1 EDDGFYMSAGYQIGEEAAQMV 20  
EDDGFY S GYQIGEEAAQMV  
Sbjct: 21 EDDGFYTSVGYQIGEEAAQMV 40

tr O25840 Outer membrane protein (Omp28) [HP1243] [Helicobacter 733  
O25840\_HELPY pylori AA  
(Campylobacter pylori)] [align](#)

Score = 59.6 bits (133), Expect = 6e-09  
Identities = 18/20 (90%), Positives = 18/20 (90%)

Query: 1 EDDGFYMSAGYQIGEEAAQMV 20  
EDDGFY S GYQIGEEAAQMV  
Sbjct: 21 EDDGFYTSVGYQIGEEAAQMV 40

tr O25556 Outer membrane protein (Omp19) [HP0896] [Helicobacter 708  
O25556\_HELPY pylori AA  
(Campylobacter pylori)] [align](#)

Score = 59.6 bits (133), Expect = 6e-09  
Identities = 18/20 (90%), Positives = 18/20 (90%)

Query: 1 EDDGFYMSAGYQIGEEAAQMV 20  
EDDGFY S GYQIGEEAAQMV  
Sbjct: 20 EDDGFYTSVGYQIGEEAAQMV 39

tr O25086 Outer membrane protein (Omp9) [HP0317] [Helicobacter 745  
O25086\_HELPY pylori AA  
(Campylobacter pylori)] [align](#)

Score = 59.6 bits (133), Expect = 6e-09  
Identities = 18/20 (90%), Positives = 18/20 (90%)

Query: 1 EDDGFYMSAGYQIGEEAAQMV 20  
EDDGFY S GYQIGEEAAQMV  
Sbjct: 21 EDDGFYTSVGYQIGEEAAQMV 40

tr Q8GNW2 BabB (Fragment) [babB] [Helicobacter pylori 137  
Q8GNW2\_HELPY (Campylobacter AA  
pylori)] [align](#)

Score = 59.6 bits (133), Expect = 6e-09  
Identities = 18/20 (90%), Positives = 18/20 (90%)



Query: 1 EDDGFYMSAGYQIGEEAAQMV 20  
EDDGFY S GYQIGEEAAQMV  
Sbjct: 13 EDDGFYTSVGYQIGEEAAQMV 32

tr Q8GNW1 BabB (Fragment) [babB] [Helicobacter pylori] 145  
Q8GNW1\_HELPY (Campylobacter  
pylori)] AA  
align

Score = 59.6 bits (133), Expect = 6e-09  
Identities = 18/20 (90%), Positives = 18/20 (90%)

Query: 1 EDDGFYMSAGYQIGEEAAQMV 20  
EDDGFY S GYQIGEEAAQMV  
Sbjct: 20 EDDGFYTSVGYQIGEEAAQMV 39

tr Q8GNW0 BabB (Fragment) [babB] [Helicobacter pylori] 135  
Q8GNW0\_HELPY (Campylobacter  
pylori)] AA  
align

Score = 59.6 bits (133), Expect = 6e-09  
Identities = 18/20 (90%), Positives = 18/20 (90%)

Query: 1 EDDGFYMSAGYQIGEEAAQMV 20  
EDDGFY S GYQIGEEAAQMV  
Sbjct: 11 EDDGFYTSVGYQIGEEAAQMV 30

tr Q8GNV8 BabB (Fragment) [babB] [Helicobacter pylori] 135  
Q8GNV8\_HELPY (Campylobacter  
pylori)] AA  
align

Score = 59.6 bits (133), Expect = 6e-09  
Identities = 18/20 (90%), Positives = 18/20 (90%)

Query: 1 EDDGFYMSAGYQIGEEAAQMV 20  
EDDGFY S GYQIGEEAAQMV  
Sbjct: 11 EDDGFYTSVGYQIGEEAAQMV 30

tr Q8GNV7 BabB (Fragment) [babB] [Helicobacter pylori] 135  
Q8GNV7\_HELPY (Campylobacter  
pylori)] AA  
align

Score = 59.6 bits (133), Expect = 6e-09  
Identities = 18/20 (90%), Positives = 18/20 (90%)

Query: 1 EDDGFYMSAGYQIGEEAAQMV 20  
EDDGFY S GYQIGEEAAQMV  
Sbjct: 11 EDDGFYTSVGYQIGEEAAQMV 30

tr Q8GNV6 BabB (Fragment) [babB] [Helicobacter pylori] 135  
Q8GNV6\_HELPY (Campylobacter  
pylori)] AA  
[align](#)

Score = 59.6 bits (133), Expect = 6e-09  
Identities = 18/20 (90%), Positives = 18/20 (90%)

Query: 1 EDDGFYMSAGYQIGEEAQMV 20  
EDDGFY S GYQIGEEAQMV  
Sbjct: 11 EDDGFYTSVGYQIGEEAQMV 30

tr Q7WVA4 Adhesin-binding fucosylated histo-blood group antigen 704  
Q7WVA4\_HELPY (Fragment) AA  
[babB] [Helicobacter pylori (Campylobacter pylori)] [align](#)

Score = 59.6 bits (133), Expect = 6e-09  
Identities = 18/20 (90%), Positives = 18/20 (90%)

Query: 1 EDDGFYMSAGYQIGEEAQMV 20  
EDDGFY S GYQIGEEAQMV  
Sbjct: 21 EDDGFYTSVGYQIGEEAQMV 40

tr Q7WVA2 Adhesin-binding fucosylated histo-blood group antigen 695  
Q7WVA2\_HELPY (Fragment) AA  
[babB] [Helicobacter pylori (Campylobacter pylori)] [align](#)

Score = 59.6 bits (133), Expect = 6e-09  
Identities = 18/20 (90%), Positives = 18/20 (90%)

Query: 1 EDDGFYMSAGYQIGEEAQMV 20  
EDDGFY S GYQIGEEAQMV  
Sbjct: 12 EDDGFYTSVGYQIGEEAQMV 31

tr Q7WVA1 Adhesin-binding fucosylated histo-blood group antigen 695  
Q7WVA1\_HELPY (Fragment) AA  
[babB] [Helicobacter pylori (Campylobacter pylori)] [align](#)

Score = 59.6 bits (133), Expect = 6e-09  
Identities = 18/20 (90%), Positives = 18/20 (90%)

Query: 1 EDDGFYMSAGYQIGEEAQMV 20  
EDDGFY S GYQIGEEAQMV  
Sbjct: 12 EDDGFYTSVGYQIGEEAQMV 31

tr Q7WV99 Adhesin-binding fucosylated histo-blood group antigen 694  
Q7WV99\_HELPY (Fragment) AA  
[babB] [Helicobacter pylori (Campylobacter pylori)] align

Score = 59.6 bits (133), Expect = 6e-09  
Identities = 18/20 (90%), Positives = 18/20 (90%)

Query: 1 EDDGFYMSAGYQIGEEAAQMV 20  
EDDGFY S GYQIGEEAAQMV  
Sbjct: 11 EDDGFYTSVGYQIGEEAAQMV 30

tr Q7WV84 Adhesin-binding fucosylated histo-blood group antigen 739  
Q7WV84\_HELPY (Fragment) AA  
[babB] [Helicobacter pylori (Campylobacter pylori)] align

Score = 59.6 bits (133), Expect = 6e-09  
Identities = 18/20 (90%), Positives = 18/20 (90%)

Query: 1 EDDGFYMSAGYQIGEEAAQMV 20  
EDDGFY S GYQIGEEAAQMV  
Sbjct: 21 EDDGFYTSVGYQIGEEAAQMV 40

tr Q7WV81 Adhesin-binding fucosylated histo-blood group antigen 737  
Q7WV81\_HELPY (Fragment) AA  
[babB] [Helicobacter pylori (Campylobacter pylori)] align

Score = 59.6 bits (133), Expect = 6e-09  
Identities = 18/20 (90%), Positives = 18/20 (90%)

Query: 1 EDDGFYMSAGYQIGEEAAQMV 20  
EDDGFY S GYQIGEEAAQMV  
Sbjct: 21 EDDGFYTSVGYQIGEEAAQMV 40

tr Q7WV74 Adhesin-binding fucosylated histo-blood group antigen 736  
Q7WV74\_HELPY (Fragment) AA  
[babB] [Helicobacter pylori (Campylobacter pylori)] align

Score = 59.6 bits (133), Expect = 6e-09  
Identities = 18/20 (90%), Positives = 18/20 (90%)

Query: 1 EDDGFYMSAGYQIGEEAAQMV 20  
EDDGFY S GYQIGEEAAQMV  
Sbjct: 21 EDDGFYTSVGYQIGEEAAQMV 40

tr Q7WV69 Adhesin-binding fucosylated histo-blood group antigen 736  
Q7WV69\_HELPY (Fragment) AA  
[babB] [Helicobacter pylori (Campylobacter pylori)] align

Score = 59.6 bits (133), Expect = 6e-09  
Identities = 18/20 (90%), Positives = 18/20 (90%)

Query: 1 EDDGFYMSAGYQIGEEAAQMV 20  
EDDGFY S GYQIGEEAAQMV  
Sbjct: 21 EDDGFYTSVGYQIGEEAAQMV 40

tr Q6T8D5 BabB (BabB2) [Helicobacter pylori (Campylobacter 706  
Q6T8D5\_HELPY pylori)] AA  
[align](#)

Score = 59.6 bits (133), Expect = 6e-09  
Identities = 18/20 (90%), Positives = 18/20 (90%)

Query: 1 EDDGFYMSAGYQIGEEAAQMV 20  
EDDGFY S GYQIGEEAAQMV  
Sbjct: 18 EDDGFYTSVGYQIGEEAAQMV 37

tr Q6T8D3 BabA [Helicobacter pylori (Campylobacter pylori)] 742 AA  
Q6T8D3\_HELPY  
[align](#)

Score = 59.6 bits (133), Expect = 6e-09  
Identities = 18/20 (90%), Positives = 18/20 (90%)

Query: 1 EDDGFYMSAGYQIGEEAAQMV 20  
EDDGFY S GYQIGEEAAQMV  
Sbjct: 18 EDDGFYTSVGYQIGEEAAQMV 37

tr Q5Q1P2 BabB/BabA1 fusion protein 1 (Fragment) [babB/babA1 731  
Q5Q1P2\_HELPY fusion] AA  
[Helicobacter pylori (Campylobacter pylori)] [align](#)

Score = 59.6 bits (133), Expect = 6e-09  
Identities = 18/20 (90%), Positives = 18/20 (90%)

Query: 1 EDDGFYMSAGYQIGEEAAQMV 20  
EDDGFY S GYQIGEEAAQMV  
Sbjct: 18 EDDGFYTSVGYQIGEEAAQMV 37

tr Q5Q1P1 BabB/BabA1 fusion protein 2 (Fragment) [babB/babA1 732  
Q5Q1P1\_HELPY fusion] AA  
[Helicobacter pylori (Campylobacter pylori)] [align](#)

Score = 59.6 bits (133), Expect = 6e-09  
Identities = 18/20 (90%), Positives = 18/20 (90%)

Query: 1 EDDGFYMSAGYQIGEEAQMV 20  
EDDGFY S GYQIGEEAQMV  
Sbjct: 18 EDDGFYTSVG YQIGEEAQMV 37

tr Q52269 Adhesin binding fucosylated histo-blood group antigen 741  
Q52269\_HELPY [babA2] AA  
[Helicobacter pylori (Campylobacter pylori)] [align](#)

Score = 59.6 bits (133), Expect = 6e-09  
Identities = 18/20 (90%), Positives = 18/20 (90%)

Query: 1 EDDGFYMSAGYQIGEEAQMV 20  
EDDGFY S GYQIGEEAQMV  
Sbjct: 21 EDDGFYTSVG YQIGEEAQMV 40

tr Q51811 Adhesin-binding fucosylated histo-blood group antigen 706  
Q51811\_HELPY [babB] AA  
[Helicobacter pylori (Campylobacter pylori)] [align](#)

Score = 59.6 bits (133), Expect = 6e-09  
Identities = 18/20 (90%), Positives = 18/20 (90%)

Query: 1 EDDGFYMSAGYQIGEEAQMV 20  
EDDGFY S GYQIGEEAQMV  
Sbjct: 18 EDDGFYTSVG YQIGEEAQMV 37

tr Q9ZN51 Putative Outer membrane protein [JHP0007] [Helicobacter 668  
Q9ZN51\_HELPJ pylori AA  
J99 (Campylobacter pylori J99)] [align](#)

Score = 58.3 bits (130), Expect = 1e-08  
Identities = 17/20 (85%), Positives = 19/20 (95%)

Query: 1 EDDGFYMSAGYQIGEEAQMV 20  
ED+GF+ SAGYQIGEEAQMV  
Sbjct: 18 EDNGFFISAGYQIGEEAQMV 37

tr Q9X748 HopZ protein precursor [hopZ] [Helicobacter pylori 667  
Q9X748\_HELPY (Campylobacter AA  
pylori)] [align](#)

Score = 58.3 bits (130), Expect = 1e-08  
Identities = 17/20 (85%), Positives = 19/20 (95%)

Query: 1 EDDGFYMSAGYQIGEEAQMV 20  
ED+GF+ SAGYQIGEEAQMV  
Sbjct: 19 EDNGFFISAGYQIGEEAQMV 38

tr [Q9X747](#) HopZ protein precursor [hopZ] [Helicobacter pylori] 669  
Q9X747\_HELPY (Campylobacter AA  
pylori)] [align](#)

Score = 58.3 bits (130), Expect = 1e-08  
Identities = 17/20 (85%), Positives = 19/20 (95%)

Query: 1 EDDGFYMSAGYQIGEEAQMV 20  
ED+GF+ SAGYQIGEEAQMV  
Sbjct: 19 EDNGFFISAGYQIGEEAQMV 38

tr [Q9X746](#) HopZ protein precursor [hopZ] [Helicobacter pylori] 699  
Q9X746\_HELPY (Campylobacter AA  
pylori)] [align](#)

Score = 58.3 bits (130), Expect = 1e-08  
Identities = 17/20 (85%), Positives = 19/20 (95%)

Query: 1 EDDGFYMSAGYQIGEEAQMV 20  
ED+GF+ SAGYQIGEEAQMV  
Sbjct: 19 EDNGFFISAGYQIGEEAQMV 38

tr [Q9X745](#) HopZ protein precursor [hopZ] [Helicobacter pylori] 668  
Q9X745\_HELPY (Campylobacter AA  
pylori)] [align](#)

Score = 58.3 bits (130), Expect = 1e-08  
Identities = 17/20 (85%), Positives = 19/20 (95%)

Query: 1 EDDGFYMSAGYQIGEEAQMV 20  
ED+GF+ SAGYQIGEEAQMV  
Sbjct: 19 EDNGFFISAGYQIGEEAQMV 38

tr [Q9S3I7](#) HopZ protein precursor [hopZ] [Helicobacter pylori] 666  
Q9S3I7\_HELPY (Campylobacter AA  
pylori)] [align](#)

Score = 58.3 bits (130), Expect = 1e-08  
Identities = 17/20 (85%), Positives = 19/20 (95%)

Query: 1 EDDGFYMSAGYQIGEEAQMV 20  
ED+GF+ SAGYQIGEEAQMV  
Sbjct: 19 EDNGFFISAGYQIGEEAQMV 38

tr Q7X2J7 HopZ (Fragment) [hopZ] [Helicobacter pylori] 73 AA  
Q7X2J7\_HELPY (Campylobacter  
pylori)] align

Score = 58.3 bits (130), Expect = 1e-08  
Identities = 17/20 (85%), Positives = 19/20 (95%)

Query: 1 EDDGFYMSAGYQIGEEAQM V 20  
ED+GF+ SAGYQIGEEAQM V  
Sbjct: 17 EDNGFFISAGYQIGEEAQM V 36

tr Q9Z390 Putative Outer membrane protein [JHP0212] [Helicobacter] 696  
Q9Z390\_HELPJ pylori AA  
J99 (Campylobacter pylori J99)] align

Score = 57.1 bits (127), Expect = 4e-08  
Identities = 17/20 (85%), Positives = 17/20 (85%)

Query: 1 EDDGFYMSAGYQIGEEAQM V 20  
EDDGFYMS GYQIGEA Q V  
Sbjct: 22 EDDGFYMSVGYQIGEAQKV 41

tr Q5G5J5 Adhesin-binding fucosylated histo-blood group (Fragment) 138  
Q5G5J5\_HELPY [babB] AA  
[Helicobacter pylori (Campylobacter pylori)] align

Score = 57.1 bits (127), Expect = 4e-08  
Identities = 17/20 (85%), Positives = 18/20 (90%)

Query: 1 EDDGFYMSAGYQIGEEAQM V 20  
E+DGFY S GYQIGEEAQM V  
Sbjct: 9 ENDGFYTSVGYQIGEEAQM V 28

tr Q6U2C5 Adhesin-binding fucosylated histo-blood group (Fragment) 134  
Q6U2C5\_HELPY [babB] AA  
[Helicobacter pylori (Campylobacter pylori)] align

Score = 57.1 bits (127), Expect = 4e-08  
Identities = 17/20 (85%), Positives = 18/20 (90%)

Query: 1 EDDGFYMSAGYQIGEEAQM V 20  
E+DGFY S GYQIGEEAQM V  
Sbjct: 11 ENDGFYTSVGYQIGEEAQM V 30

tr Q9ZMK5 Outer membrane protein/porin [hopA] [Helicobacter pylori] 483  
Q9ZMK5\_HELPJ J99 AA  
(Campylobacter pylori J99)] align

Score = 56.2 bits (125), Expect = 6e-08  
Identities = 17/20 (85%), Positives = 18/20 (90%)

Query: 1 EDDGFYMSAGYQIGEEAAQMV 20  
E+DG YMS GYQIGEEAAQMV  
Sbjct: 17 ENDGVYMSVGYQIGEEAAQMV 36

tr Q9ZN38 Putative Outer membrane protein [JHP0021] [Helicobacter 690  
Q9ZN38\_HELPJ pylori AA  
J99 (Campylobacter pylori J99)] [align](#)

Score = 55.8 bits (124), Expect = 8e-08  
Identities = 16/20 (80%), Positives = 18/20 (90%)

Query: 1 EDDGFYMSAGYQIGEEAAQMV 20  
ED+GF+ SAGYQIGE AQMV  
Sbjct: 21 EDNGFFVSAGYQIGESAQMV 40

tr O24870 Outer membrane protein (Omp2) [HP0025] [Helicobacter 711  
O24870\_HELPJ pylori AA  
(Campylobacter pylori)] [align](#)

Score = 55.8 bits (124), Expect = 8e-08  
Identities = 16/20 (80%), Positives = 18/20 (90%)

Query: 1 EDDGFYMSAGYQIGEEAAQMV 20  
ED+GF+ SAGYQIGE AQMV  
Sbjct: 21 EDNGFFVSAGYQIGESAQMV 40

tr Q9ZLC1 Putative Outer membrane protein [JHP0659] [Helicobacter 638  
Q9ZLC1\_HELPJ pylori AA  
J99 (Campylobacter pylori J99)] [align](#)

Score = 54.9 bits (122), Expect = 2e-07  
Identities = 16/20 (80%), Positives = 18/20 (90%)

Query: 1 EDDGFYMSAGYQIGEEAAQMV 20  
ED+GF+ SAGYQIGEA QMV  
Sbjct: 21 EDNGFFVSAGYQIGEAQMV 40

tr Q9ZLB8 Putative Outer membrane protein [JHP0662] [Helicobacter 651  
Q9ZLB8\_HELPJ pylori AA  
J99 (Campylobacter pylori J99)] [align](#)

Score = 54.9 bits (122), Expect = 2e-07  
Identities = 16/20 (80%), Positives = 18/20 (90%)



Query: 1 EDDGFYMSAGYQIGEEAQMV 20  
ED+GF+ SAGYQIGEA QMV  
Sbjct: 21 EDNGFFVSAGYQIGEAVQMV 40

tr Q7X2K7 SabA (Fragment) [sabA] [Helicobacter pylori] 99 AA  
Q7X2K7\_HELPY (Campylobacter  
pylori)] align

Score = 54.9 bits (122), Expect = 2e-07  
Identities = 16/20 (80%), Positives = 18/20 (90%)

Query: 1 EDDGFYMSAGYQIGEEAQMV 20  
ED+GF+ SAGYQIGEA QMV  
Sbjct: 19 EDNGFFVSAGYQIGEAVQMV 38

tr Q7X2K6 SabA (Fragment) [sabA] [Helicobacter pylori] 99 AA  
Q7X2K6\_HELPY (Campylobacter  
pylori)] align

Score = 54.9 bits (122), Expect = 2e-07  
Identities = 16/20 (80%), Positives = 18/20 (90%)

Query: 1 EDDGFYMSAGYQIGEEAQMV 20  
ED+GF+ SAGYQIGEA QMV  
Sbjct: 19 EDNGFFVSAGYQIGEAVQMV 38

Database: EXPASY/UniProtKB

Posted date: Apr 28, 2005 3:30 PM

Number of letters in database: 604,459,357

Number of sequences in database: 1,880,849

Lambda	K	H
0.334	0.275	1.76

Gapped

Lambda	K	H
0.294	0.110	0.610

Matrix: PAM30

Gap Penalties: Existence: 9, Extension: 1

Number of HSP's successfully gapped in prelim test: 0

length of query: 20

length of database: 604,459,357

effective HSP length: 11

effective length of query: 9

effective length of database: 583,770,018

effective search space: 5253930162

effective search space used: 5253930162

T: 16

A: 40

X1: 15 ( 7.2 bits)

X2: 35 (14.8 bits)  
X3: 58 (24.6 bits)  
S1: 41 (21.6 bits)  
S2: 61 (29.1 bits)

Wallclock time: 7 seconds

 [ExPASy Home page](#) [Site Map](#) [Search ExPASy](#) [Contact us](#) [Proteomics tools](#) [Swiss-Prot](#)

DOCUMENT-IDENTIFIER: US 6887663 B1

TITLE: Streptococcus pneumoniae SP036 polynucleotides

Detailed Description Paragraph Table (7):

ACGAGTAAAAAGCGAA SP075 amino acid (SEQ ID NO:126)

YYLSRES DLEVTVFDHEQGQATKAAAGIIPWFSKRRNKAWYKMARLGADFYVDLLADLEKSC  
QRSGVFLKKDES NLEELYQLALQRREESPLIGQLAILNQASANELFPGLQGFDRLLYASGGARV  
LVTRLLEVSHVKLVKEKVTLTPLASGYOIGEEFEQVILATGAWLGDMLEPLGYEVDVRPQRC  
LAQDMEDYPVVMPEGEWDLIPFAGGKLSLGATHENDMGFDLTVDETLLQQMEEATLTHYLILA  
ERVGIRAYTSDFS PFFGQVPDLTG VYAASGLGSSGLTTGP IIGYHLAQLIQDKELTLDPLNYPIN  
RVKSE SP076 nucleotide (SEQ ID NO:127)

## WEST Search History

[Hide Items](#)[Restore](#)[Clear](#)[Cancel](#)

DATE: Tuesday, May 03, 2005

Hide?	<u>Set</u> <u>Name</u>	<u>Query</u>	<u>Hit</u> <u>Count</u>
	<i>DB=USPT; PLUR=YES; OP=AND</i>		
<input type="checkbox"/>	L1	blood near2 group near2 binding near2 protein	4
<input type="checkbox"/>	L2	antiadhesion or anti-adhesion or anti-adhesin or antiadhesin or antibab or antibaba or anti-bab or anti-bab-a or antibab\$3	963
<input type="checkbox"/>	L3	L2 and helicobacter	12
<input type="checkbox"/>	L4	L3 not l1	12
<input type="checkbox"/>	L5	L3 not l1	12
<input type="checkbox"/>	L6	antibab or antibaba or anti-bab or anti-bab-a or antibab\$3	6
<input type="checkbox"/>	L7	helicobacter near10 (adhesin or adherence or attachment or receptor)	56
<input type="checkbox"/>	L8	L7 and (blood or lewis)	51
<input type="checkbox"/>	L9	L7 same (blood or lewis)	17
<input type="checkbox"/>	L10	antihelicobacter	1

END OF SEARCH HISTORY

6843993. 27 Jul 01; 18 Jan 05. Anti-microbial-adhesion fraction derived from vaccinium. Ofek; Itzhak, et al. 424/732; 424/405 424/408 424/410 424/417 424/440 424/777. A01N065/00 A61K035/78.

☐ 2. 6794363. 14 Nov 01; 21 Sep 04. Isolated amyloid inhibitor protein (APIP) and compositions thereof. Bejanin; Stephane, et al. 514/12; 435/23 530/350 536/23.5. C12Q001/37 C07H021/04 C07K014/00 A61K038/00.

☐ 3. 6780602. 01 Nov 01; 24 Aug 04. Taxonomic identification of pathogenic microorganisms and their toxic proteins. Powers; Linda S., et al. 435/7.1; 422/82.05 435/4 435/5 435/7.2 436/164 436/172 436/536 436/538. G01N033/53 G01N021/00 G01N021/29 C11Q001/00 C12Q001/70.

☐ 4. 6384202. 25 Apr 97; 07 May 02. Cell-specific active compounds regulated by the cell cycle. Sedlacek; Hans-Harald, et al. 536/23.1; 424/93.1 424/93.2 424/93.6 435/320.1 536/23.5 536/24.1. A01N063/00 A61K048/00 C07H021/02 C12N015/63.

☐ 5. 6303125. 24 Sep 98; 16 Oct 01. Anti-microbial-adhesion fraction derived from vaccinium. Ofek; Itzhak, et al. 424/732; 424/405 424/408 424/410 424/417 424/440 514/783. A01N065/00.

☐ 6. 6218147. 08 Dec 99; 17 Apr 01. Haemophilus adhesin protein. Lingwood; Clifford A.. 435/69.3; 424/256.1 435/243 435/252.3 435/69.1 435/71.1 536/23.1 536/23.7. C12N015/09.

☐ 7. 6136790. 28 Jul 97; 24 Oct 00. Carbohydrate mimetics having antiadhesive properties. Toepfer; Alexander, et al. 514/25; 514/23 514/54 514/61 514/62 536/118 536/124 536/17.2 536/17.5 536/18.5 536/18.6 536/18.7 536/33 536/4.1 536/53 536/54 536/55 536/55.1 536/55.2 536/55.3. A61K031/70 C07H015/00.

☐ 8. 6054134. 26 Jul 96; 25 Apr 00. Haemophilus adhesin protein. Lingwood; Clifford A.. 424/256.1; 424/185.1 424/190.1 424/200.1 424/234.1 424/241.1 435/69.1 435/69.3 530/350 536/23.1 536/23.7. A61K039/102.

☐ 9. 6030612. 07 Jun 95; 29 Feb 00. Antimicrobial uses of multifunctional enzyme. de Faire; Johan R., et al. 424/94.63; 424/94.6 435/226 435/264 435/267 435/268. A61K038/48 A61K038/46 C12N009/64 D06M016/00.

☐ 10. 5958406. 08 Feb 96; 28 Sep 99. Acne treatment with multifunctional enzyme. de Faire; Johan R., et al. 424/94.63; 424/94.6 435/226 435/264. A61K038/48 C12N009/64 D06M016/00.

☐ 11. 5840322. 19 Dec 96; 24 Nov 98. Anti-oral-microbial adhesion fraction derived from vaccinium. Weiss; Ervin, et al. 424/405; 424/408 424/410 424/417 424/440 424/49 424/58 424/732. A01N025/02.

☐ 12. 5817742. 11 Sep 96; 06 Oct 98. Polymer-conjugated malonic acid derivatives and their use as medicaments and diagnostic agents. Toepfer; Alexander, et al. 528/328; 528/329.1 528/330 528/331 528/332 528/335 528/363. C08G069/10.

Generate Collection

Print

Terms	Documents
L3 not L1	12

7. Lingwood C A, (1993), Helicobacter pylori: Biology and Clinical Practice. In: Goodwin S and Worsley B. "H. pylori adhesins and receptors". CRC Press, Boca Raton, Fla., 209-222.

- Reeck, G.R et al, *Cell*, vol. 50, p. 667, Aug. 28, 1987.\*
- Lewin, R. *Science*, vol. 237, p. 1570, 1987.\*
- Evans et al, *Journal of Bacteriology*, Feb. 1993, vol. 175(3), pp. 674-683, 1993.\*
- Huang et al, *Journal of General Microbiology*, vol. 138, pp. 1503-1513, 1992.\*
- Lelwala-Guruge et al, *ZBL. Bakt.* vol. 280, pp. 93-106, 1993.\*
- Chan et al, *Glycobiology*, vol. 5(7), pp. 683-688, 1995.\*
- Moran, Anthony P., *FEMS Immunology and Medical Microbiology*, vol. 10, pp. 271-280, 1995.\*
- Boren et al, *Trends in Microbiology*, vol. 2(7), Jul., 1994.\*
- Sherburne et al, *Infection and Immunity*, vol. 62(12), pp. 4564-4568, Dec. 1995.\*
- Boren et al, *Science*, vol. 262, pp. 1892-1895, 1993.\*
- Lelwala-Gruge et al, *APMIS*, vol. 100, pp. 908-913, 1992.\*
- Wadstrom, T, *ACTA Microbiologica Hungarica*, vol. 38 (3-4), pp. 164-165, 1991.\*
- Wadstrom, T et al, *European Journal of Gastroenterology and Hepatology*, vol. 5, S2, Oct., pp. S12-S15, 1993.\*
- Wadstrom, T et al, *Aliment Pharmacol. Therapy*, Apr., vol. 10, Suppl. 1, pp. 17-27, 1996.\*
- Orkin, Stuart H et al, *NIH Report and Recommendations of the Panel to assess the NIH investment in research on gene therapy*, Dec. 7, 1995.\*
- Taylor et al, *Journal of Bacteriology*, Nov. 1992, vol. 174(21), pp. 6800-6802.\*
- Bukanov, N.O et al, *Molecular Microbiology*, Feb. 1994, pp. 509-523, vol. 11(3), Feb. 1994.\*
- Amano Kenichi, Akita Igaku (*Akita Journal of Medicine*), vol. 24(2), pp. 101-108, (English translation), 1997.\*
- Wirth, H et al, *Infection Immunity*, vol. 64(11), Nov. 1996, pp. 4598-4605, Nov. 1996.\*
- Simoons-Smit et al, *Journal of Clinical Microbiology*, vol. 34(9), pp. 2196-2200, Sep. 1996.\*
- Enders, G et al, *Infection Immunity*, vol. 63(7), pp. 2473-2477, Jul. 1995.\*
- Alkout, AH et al, *Gut*, Jul. 17-19, 1995, vol. 37(suppl. 7) p. A21, abstract 84.\*
- Odenbreit, S et al, *Molecular Microbiology*, vol. 20(2), pp. 361-373, Apr. 1996.

File 155:MEDLINE(R) 1951-2005/May W1  
(c) format only 2005 The Dialog Corp.

Set Items Description  
---  
Cost is in DialUnits  
? ds  
Terminal set to DLINK  
? t s24/9/all

Set	Items	Description
S1	413	'BABA PROTEIN, HELICOBACTER PYLORI' OR 'BAB' OR 'BABA'
S2	52	S1 AND HELICOBACT?
S3	52	S2/1997:2005
S4	0	S2 NOT S3
S5	10	E3-E4
S6	10	S5/1997:2005
S7	17	PORIN? AND HELICOBACTER?
S8	11	S7/1997:2005
S9	6	S7 NOT S8
S10	305	'HOPF'
S11	69	'HOPG'
S12	4	'HOPH'
S13	57	'HOPI'
S14	10	'HOPZ' OR 'HOPZ PROTEIN, HELICOBACTER PYLORI'
S15	3	'HOPQ'
S16	447	S10 OR S11 OR S12 OR S13 OR S14 OR S15
S17	1454	S16 OR HOP
S18	924	S17/1997:2005
S19	530	S17 NOT S18
S20	0	S19 AND (PYLORI OR PYLORIS OR PYLROI OR PYLORIDIS OR HELIC-OBAC?)
S21	4328	PORIN? OR HOP
S22	20	S21 AND (PYLORI OR PYLORIS OR PYLROI OR PYLORIDIS OR HELIC-OBAC?)
S23	14	S22/1997:2005
S24	6	S22 NOT S23

? logoff hold

24/9/1

DIALOG(R) File 155:MEDLINE(R)  
(c) format only 2005 The Dialog Corp. All rts. reserv.

11140349 PMID: 7559328

**Isolation and characterization of a conserved porin protein from Helicobacter pylori .**

Doig P; Exner M M; Hancock R E; Trust T J

Canadian Bacterial Diseases Network, University of Victoria, British Columbia, Canada.

Journal of bacteriology (UNITED STATES) Oct 1995, 177 (19) p5447-52, ISSN 0021-9193 Journal Code: 2985120R

Contract/Grant No.: R01A129927-01A2; PHS

Publishing Model Print

Document type: Journal Article

Languages: ENGLISH

Main Citation Owner: NLM

Record type: MEDLINE; Completed

Subfile: INDEX MEDICUS

**Helicobacter pylori** is a causative agent of gastritis in humans and



is correlated with gastric ulcer formation. Infections with this bacterium have proven difficult to treat with antimicrobial agents. To better understand how this bacterium transports compounds such as antimicrobial agents across its outer membrane, identification of **porin** proteins is important. We have recently identified a family of *H. pylori* **porins** (HopA to HopD) (M. M. Exner, P. Doig, T. J. Trust, and R. E. W. Hancock, Infect. Immun. 63:1567-1572, 1995). Here, we report on an unrelated **porin** species (HopE) from this bacterium. This protein had a apparent molecular mass of 31 kDa and was seen to form 50- and 90-kDa aggregates that were designated putative dimeric and trimeric forms, respectively. The protein was purified to homogeneity and, with a model planar lipid membrane system, was shown to act as a nonselective pore with a single channel conductance in 1.0 M KCl of 1.5 nS, similarly to other bacterial nonspecific **porins**. An internal peptide sequence of HopE shared homology with the P2 **porin** of *Haemophilus influenzae*. HopE was also shown to be antigenic in vivo as assessed by sera taken from *H. pylori* -infected individuals and was immunologically conserved with both patient sera and specific monoclonal antibodies. From these data, it appears that HopE is a major nonselective **porin** of *H. pylori*. The implications of these findings are discussed.

Tags: Research Support, Non-U.S. Gov't; Research Support, U.S. Gov't, P.H.S.

Descriptors: **\*Helicobacter** r **pylori** --chemistry--CH; **\* Porins** --chemistry--CH; Amino Acid Sequence; Antibodies, Bacterial; Antibodies, Monoclonal; Cross-Linking Reagents; Electric Conductivity; **Helicobacter pylori** --immunology--IM; Humans; Lipid Bilayers; Membrane Potentials; Molecular Sequence Data; Molecular Weight; Peptide Fragments--chemistry--CH; **Porins** --immunology--IM; **Porins** --isolation and purification--IP; Sequence Analysis; Sequence Homology, Amino Acid; Succinimides  
CAS Registry No.: 0 (Antibodies, Bacterial); 0 (Antibodies, Monoclonal); 0 (Cross-Linking Reagents); 0 (Lipid Bilayers); 0 (Peptide Fragments); 0 (Porins); 0 (Succinimides); 57757-57-0 (dithiobis(succinimidylpropionate))  
Record Date Created: 19951106  
Record Date Completed: 19951106

24/9/2

DIALOG(R) File 155:MEDLINE(R)

(c) format only 2005 The Dialog Corp. All rts. reserv.

11024097 PMID: 7600133

**Progress in defining the inflammatory cascade.**

Figura N

School of Gastroenterology, University of Siena, Policlinico Le Scotte, Italy.

European journal of gastroenterology & hepatology (ENGLAND) Apr 1995,

7 (4) p296-302, ISSN 0954-691X Journal Code: 9000874

Publishing Model Print

Document type: Journal Article; Review; Review, Tutorial

Languages: ENGLISH

Main Citation Owner: NLM

Record type: MEDLINE; Completed

Subfile: INDEX MEDICUS

**Helicobacter pylori** infection is characterized by an inflammatory response in the gastric epithelium, the intensity of which appears to be type-strain specific. Infections caused by Type 1 *H. pylori* organisms, i.e., those expressing VacA (the cytotoxin) and CagA (the cytotoxin-associated protein), are associated with a strong polymorph

mucosal infiltration in vivo, and with increased secretion of interleukin-8 by epithelial cells. The inflammatory potential of Type II strains (non-cytotoxic, VacA- and CagA-negative) is probably less pronounced. The small urease subunit, porins, and other substances produced by H. pylori show neutrophil chemotactic activities in vitro. These bacterial components promote the adhesion of polymorphs to endothelial cells and stimulate polymorphs to generate oxygen reactive metabolites. This can severely damage the gastroduodenal mucosa. (38 Refs.)

Descriptors: \*Helicobacter Infections--metabolism--ME; \* Helicobacter pylori ; Helicobacter pylori --metabolism--ME; Humans; Inflammation --metabolism--ME; Interleukin-8--metabolism--ME

CAS Registry No.: 0 (Interleukin-8)

Record Date Created: 19950807

Record Date Completed: 19950807

24/9/3

DIALOG(R) File 155:MEDLINE(R)

(c) format only 2005 The Dialog Corp. All rts. reserv.

10992393 PMID: 7773243

Cell surface characteristics of Helicobacter pylori .

Moran A P

Department of Microbiology, University College, Galway, Ireland.

FEMS immunology and medical microbiology (NETHERLANDS) Feb 1995, 10 (3-4) p271-80, ISSN 0928-8244 Journal Code: 9315554

Publishing Model Print

Document type: Journal Article; Review

Languages: ENGLISH

Main Citation Owner: NLM

Record type: MEDLINE; Completed

Subfile: INDEX MEDICUS

Helicobacter pylori is an important gastroduodenal pathogen of humans. Immunological and structural studies have been performed on the phospholipids, lipopolysaccharides (LPS) and some surface proteins of H. pylori strains. H. pylori LPS has, in general, low immunological activity and this property may aid the survival of this chronic infection. Nevertheless, H. pylori LPS has been found to influence the quality of gastric mucin and to stimulate pepsinogen secretion, thereby contributing to gastric disease. A number of putative adhesins of the bacterium have been described. This multiplicity of adhesins may reflect that H. pylori adherence is a multi-step process involving different interactions, and that different adhesins may mediate adherence to various sites in gastric tissue. (54 Refs.)

Tags: Research Support, Non-U.S. Gov't

Descriptors: \*Bacterial Outer Membrane Proteins--chemistry--CH; \* Helicobacter pylori --physiology--PH; \*Lipopolysaccharides--chemistry --CH; \*Lipopolysaccharides--immunology--IM; Adhesins, Bacterial--chemistry --CH; Adhesins, Bacterial--physiology--PH; Animals; Bacterial Capsules --physiology--PH; Bacterial Outer Membrane Proteins--physiology--PH; Carbohydrate Sequence; Cell Wall--chemistry--CH; Cell Wall--physiology--PH ; Heat-Shock Proteins--chemistry--CH; Helicobacter pylori --pathogenicity--PY; Humans; Molecular Sequence Data; Porins --chemistry --CH; Porins --immunology--IM; Rats

CAS Registry No.: 0 (Adhesins, Bacterial); 0 (Bacterial Capsules); 0 (Bacterial Outer Membrane Proteins); 0 (Heat-Shock Proteins); 0 (Lipopolysaccharides); 0 (Porins)

Record Date Created: 19950713

Record Date Completed: 19950713

24/9/4

DIALOG(R) File 155:MEDLINE(R)

(c) format only 2005 The Dialog Corp. All rts. reserv.

10899919 PMID: 7534278

**Isolation and characterization of a family of porin proteins from *Helicobacter pylori*.**

Exner M M; Doig P; Trust T J; Hancock R E

Department of Microbiology and Immunology, University of British Columbia, Vancouver, Canada.

Infection and immunity (UNITED STATES) Apr 1995, 63 (4) p1567-72,  
ISSN 0019-9567 Journal Code: 0246127

Contract/Grant No.: R01AI29927-01A2; AI; NIAID

Publishing Model Print

Document type: Journal Article

Languages: ENGLISH

Main Citation Owner: NLM

Record type: MEDLINE; Completed

Subfile: INDEX MEDICUS

Two-dimensional gel electrophoresis was used to identify heat-modifiable outer membrane proteins, which were candidates for **porins**, from *Helicobacter pylori* membrane preparations. Four such proteins with apparent molecular masses of 48, 49, 50, and 67 kDa were isolated. The four proteins copurified together after selective detergent solubilizations followed by anion-exchange chromatography, and each protein was ultimately purified to homogeneity by gel purification. These proteins were then tested for pore-forming ability with a planar lipid bilayer model membrane system. All four proteins appeared to be present as monomers, and they formed pores with low single-channel conductances in 1.0 M KCl of 0.36, 0.36, 0.30, and 0.25 nS, respectively, for the 48-, 49-, 50-, and 67-kDa proteins which we propose to designate HopA, HopB, HopC, and HopD. N-terminal amino acid sequence analyses showed a high degree of homology among all four proteins, and it appears that these proteins constitute a family of related **porins** in *H. pylori*.

Tags: Research Support, Non-U.S. Gov't; Research Support, U.S. Gov't, P.H.S.

Descriptors: **\*Helicobacter pylori** --chemistry--CH; **\* Porins** --isolation and purification--IP; Amino Acid Sequence; Electric Conductivity; Electrophoresis, Gel, Two-Dimensional; Heat; **Helicobacter pylori** --physiology--PH; Ion Channels--chemistry--CH; Ion Channels --isolation and purification--IP; Molecular Sequence Data; Molecular Weight ; Multigene Family; **Porins** --chemistry--CH; Sequence Alignment; Sequence Homology, Amino Acid

CAS Registry No.: 0 (Ion Channels); 0 (Porins)

Gene Symbol: hopA; hopB; hopC; hopD

Record Date Created: 19950420

Record Date Completed: 19950420

24/9/5

DIALOG(R) File 155:MEDLINE(R)

(c) format only 2005 The Dialog Corp. All rts. reserv.

10721188 PMID: 7927718

**Identification of surface-exposed outer membrane antigens of**

Helicobacter pylori .

Doig P; Trust T J

Department of Biochemistry and Microbiology, University of Victoria,  
British Columbia, Canada.

Infection and immunity (UNITED STATES) Oct 1994, 62 (10) p4526-33,  
ISSN 0019-9567 Journal Code: 0246127

Contract/Grant No.: 1R01AI29927-01A2; AI; NIAID

Publishing Model Print

Document type: Journal Article

Languages: ENGLISH

Main Citation Owner: NLM

Record type: MEDLINE; Completed

Subfile: INDEX MEDICUS

Despite the potential significance of surface-localized antigens in the colonization by and disease processes of *Helicobacter pylori*, few such components have been unequivocally identified and/or characterized. To further investigate the surface of this bacterium, monoclonal antibodies (MAbs) to a sarcosine-insoluble outer membrane fraction prepared from *H. pylori* NCTC 11637 were raised. MAbs were selected on the basis of their surface reactivity to whole cells by enzyme-linked immunosorbent assay, immunofluorescence, and immunoelectron microscopy. By use of this selection protocol, 14 surface-reactive MAbs were chosen. These MAbs were used to identify six protein antigens (molecular masses, 80, 60, 51, 50, 48, and 31 kDa), all of which were localized within or associated with the outer membrane. Two of the MAbs recognized the core region of lipopolysaccharide (LPS). Only these two anti-LPS MAbs also recognized the flagellar sheath, indicating a structural difference between the sheath and outer membrane. Three of the protein antigens (80, 60, and 51 kDa) were strain specific, while the other three antigens were present in other strains of *H. pylori*. Both the 51- and 48-kDa antigens were heat modifiable and likely are porins. A conserved 31-kDa protein may represent another species of porin. A method involving sucrose density ultracentrifugation and Triton extraction that allows the preparation of *H. pylori* outer membranes with minimal inner membrane contamination is described. Sodium dodecyl sulfate-polyacrylamide gel electrophoresis analysis showed that the protein content of the *H. pylori* outer membrane is similar structurally to those of other species of *Helicobacter* but markedly different from those of taxonomically related *Campylobacter* spp. and *Escherichia coli*. *H. pylori* also appeared to lack peptidoglycan-associated proteins.

Tags: Research Support, Non-U.S. Gov't; Research Support, U.S. Gov't, P.H.S.

Descriptors: \*Antigens, Bacterial--analysis--AN; \*Bacterial Outer Membrane Proteins--analysis--AN; \**Helicobacter pylori* --immunology--IM; Animals; Antibodies, Monoclonal--immunology--IM; Antigens, Surface--analysis--AN; Mice; Mice, Inbred BALB C; Molecular Weight

CAS Registry No.: 0 (Antibodies, Monoclonal); 0 (Antigens, Bacterial); 0 (Antigens, Surface); 0 (Bacterial Outer Membrane Proteins)

Record Date Created: 19941104

Record Date Completed: 19941104

24/9/6

DIALOG(R) File 155:MEDLINE(R)

(c) format only 2005 The Dialog Corp. All rts. reserv.

10540278 PMID: 8132346

Immunobiological activities of *Helicobacter pylori* porins .

Tufano M A; Rossano F; Catalanotti P; Liguori G; Capasso C; Ceccarelli M

T; Marinelli P

Istituto di Microbiologia, Seconda Universita di Napoli, Italy.

Infection and immunity (UNITED STATES) Apr 1994, 62 (4) p1392-9,  
ISSN 0019-9567 Journal Code: 0246127

Publishing Model Print

Document type: Journal Article

Languages: ENGLISH

Main Citation Owner: NLM

Record type: MEDLINE; Completed

Subfile: INDEX MEDICUS

Studies were carried out on some biological activities of *Helicobacter pylori* porins in vitro. We extracted and purified a porin with an apparent molecular mass of 30 kDa. Human polymorphonuclear leukocytes preincubated with H. *pylori* porins showed a decrease of chemotaxis, of adherence to nylon wool, and of chemiluminescence. Used as chemotaxins in place of zymosan-activated serum or as chemotaxinogens in place of zymosan, the porins induced polymorphonuclear leukocyte migration. Human monocytes and lymphocytes cultivated in the presence of H. *pylori* porins released cytokines. Release of the various cytokines studied was obtained with differentiated kinetics and at various porin concentrations. Starting only 3 h after culture, tumor necrosis factor alpha is released quickly, reaching a peak at 18 h, at a porin concentration of 1 microgram/ml/10(6) cells. Interleukin-6 (IL-6) appears later, with a peak at 10 micrograms/ml/10(6) cells, while IL-8 is released after 6 h of culture, with a peak at 24 h, at a porin concentration of 10 micrograms/ml/10(6) cells, while IL-8 is released after 6 h of culture, with a peak at 24 h, at a porin concentration of 10 micrograms/ml/10(6) cells. Lymphocytes stimulated by H. *pylori* porins release gamma interferon after 18 h of culture at higher concentrations of porins (20 micrograms/ml/10(6) cells). Granulocyte macrophage colony-stimulating factor is released from 6 to 48 h at a concentration of 1 microgram/ml/10(6) cells, while both IL-3 and IL-4 are released after 18 h of culture at different porin concentrations (0.1 and 1 microgram/ml/10(6) cells, respectively). Our results lead us to think that during H. *pylori* infection, surface components, porins in particular, are able to induce a series of chain reactions ranging from the inflammatory to the immunological responses.

Tags: Research Support, Non-U.S. Gov't

Descriptors: \**Helicobacter pylori* --pathogenicity--PY; \* Porins --pharmacology--PD; Chemotaxis, Leukocyte--drug effects--DE; Granulocyte-Macrophage Colony-Stimulating Factor--secretion--SE; Humans; Interleukins --secretion--SE; Lymphocytes--drug effects--DE; Lymphocytes--secretion--SE; Monocytes--drug effects--DE; Monocytes--secretion--SE; Neutrophils--drug effects--DE; Neutrophils--immunology--IM; Tumor Necrosis Factor-alpha --secretion--SE

CAS Registry No.: 0 (Interleukins); 0 (Porins); 0 (Tumor Necrosis Factor-alpha); 83869-56-1 (Granulocyte-Macrophage Colony-Stimulating Factor)

Record Date Created: 19940421

Record Date Completed: 19940421

?

03may05 10:57:16 User228206 Session D2434.7

\$0.76 0.239 DialUnits File155

\$1.26 6 Type(s) in Format 9

\$1.26 6 Types

\$2.02 Estimated cost File155

\$0.26 TELNET

\$2.28 Estimated cost this search

\$2.28 Estimated total session cost 0.239 DialUnits

11140349 PMID: 7559328

**Isolation and characterization of a conserved porin protein from *Helicobacter pylori*.**

Doig P; Exner M M; Hancock R E; Trust T J

Canadian Bacterial Diseases Network, University of Victoria, British Columbia, Canada.

Journal of bacteriology (UNITED STATES) Oct 1995, 177 (19) p5447-52, ISSN 0021-9193 Journal Code: 2985120R

Contract/Grant No.: R01A129927-01A2; PHS

Publishing Model Print

Document type: Journal Article

Languages: ENGLISH

Main Citation Owner: NLM

Record type: MEDLINE; Completed

Subfile: INDEX MEDICUS

***Helicobacter pylori*** is a causative agent of gastritis in humans and is correlated with gastric ulcer formation. Infections with this bacterium have proven difficult to treat with antimicrobial agents. To better understand how this bacterium transports compounds such as antimicrobial agents across its outer membrane, identification of **porin** proteins is important. We have recently identified a family of *H. pylori* **porins** (HopA to HopD) (M. M. Exner, P. Doig, T. J. Trust, and R. E. W. Hancock, Infect. Immun. 63:1567-1572, 1995). Here, we report on an unrelated **porin** species (HopE) from this bacterium. This protein had a apparent molecular mass of 31 kDa and was seen to form 50- and 90-kDa aggregates that were designated putative dimeric and trimeric forms, respectively. The protein was purified to homogeneity and, with a model planar lipid membrane system, was shown to act as a nonselective pore with a single channel conductance in 1.0 M KCl of 1.5 nS, similarly to other bacterial nonspecific **porins**. An internal peptide sequence of HopE shared homology with the P2 **porin** of *Haemophilus influenzae*. HopE was also shown to be antigenic in vivo as assessed by sera taken from *H. pylori*-infected individuals and was immunologically conserved with both patient sera and specific monoclonal antibodies. From these data, it appears that HopE is a major nonselective **porin** of *H. pylori*. The implications of these findings are discussed.

Tags: Research Support, Non-U.S. Gov't; Research Support, U.S. Gov't, P.H.S.

Descriptors: \***Helicobacter pylori**--chemistry--CH; \* **Porins** --chemistry--CH; Amino Acid Sequence; Antibodies, Bacterial; Antibodies, Monoclonal; Cross-Linking Reagents; Electric Conductivity; **Helicobacter pylori** --immunology--IM; Humans; Lipid Bilayers; Membrane Potentials; Molecular Sequence Data; Molecular Weight; Peptide Fragments--chemistry--CH; **Porins** --immunology--IM; **Porins** --isolation and purification--IP; Sequence Analysis; Sequence Homology, Amino Acid; Succinimides

CAS Registry No.: 0 (Antibodies, Bacterial); 0 (Antibodies, Monoclonal); 0 (Cross-Linking Reagents); 0 (Lipid Bilayers); 0 (Peptide Fragments); 0 (Porins); 0 (Succinimides); 57757-57-0 (dithiobis(succinimidylpropionate))

Record Date Created: 19951106

Record Date Completed: 19951106

9/9/2

DIALOG(R) File 155:MEDLINE(R)

(c) format only 2005 The Dialog Corp. All rts. reserv.

11024097 PMID: 7600133

**Progress in defining the inflammatory cascade.**

Figura N

School of Gastroenterology, University of Siena, Policlinico Le Scotte, Italy.

European journal of gastroenterology & hepatology (ENGLAND) Apr 1995,  
7 (4) p296-302, ISSN 0954-691X Journal Code: 9000874

Publishing Model Print

Document type: Journal Article; Review; Review, Tutorial

Languages: ENGLISH

Main Citation Owner: NLM

Record type: MEDLINE; Completed

Subfile: INDEX MEDICUS

**Helicobacter pylori** infection is characterized by an inflammatory response in the gastric epithelium, the intensity of which appears to be type-strain specific. Infections caused by Type I *H. pylori* organisms, i.e., those expressing VacA (the cytotoxin) and CagA (the cytotoxin-associated protein), are associated with a strong polymorph mucosal infiltration in vivo, and with increased secretion of interleukin-8 by epithelial cells. The inflammatory potential of Type II strains (non-cytotoxic, VacA- and CagA-negative) is probably less pronounced. The small urease subunit, **porins**, and other substances produced by *H. pylori* show neutrophil chemotactic activities in vitro. These bacterial components promote the adhesion of polymorphs to endothelial cells and stimulate polymorphs to generate oxygen reactive metabolites. This can severely damage the gastroduodenal mucosa. (38 Refs.)

Descriptors: \***Helicobacter** Infections--metabolism--ME; \* **Helicobacter pylori**; **Helicobacter pylori**--metabolism--ME; Humans; Inflammation --metabolism--ME; Interleukin-8--metabolism--ME

CAS Registry No.: 0 (Interleukin-8)

Record Date Created: 19950807

Record Date Completed: 19950807

9/9/3

DIALOG(R) File 155:MEDLINE(R)

(c) format only 2005 The Dialog Corp. All rts. reserv.

10992393 PMID: 7773243

**Cell surface characteristics of Helicobacter pylori.**

Moran A P

Department of Microbiology, University College, Galway, Ireland.

FEMS immunology and medical microbiology (NETHERLANDS) Feb 1995, 10  
(3-4) p271-80, ISSN 0928-8244 Journal Code: 9315554

Publishing Model Print

Document type: Journal Article; Review

Languages: ENGLISH

Main Citation Owner: NLM

Record type: MEDLINE; Completed

Subfile: INDEX MEDICUS

**Helicobacter pylori** is an important gastroduodenal pathogen of humans. Immunological and structural studies have been performed on the phospholipids, lipopolysaccharides (LPS) and some surface proteins of *H. pylori* strains. *H. pylori* LPS has, in general, low immunological activity and this property may aid the survival of this chronic infection. Nevertheless, *H. pylori* LPS has been found to influence the quality of gastric mucin and to stimulate pepsinogen secretion, thereby contributing to gastric disease. A number of putative adhesins of the bacterium have been described. This multiplicity of adhesins may reflect that *H. pylori* adherence is a multi-step process involving different interactions, and that different adhesins may mediate adherence to various sites in gastric

tissue. (54 Refs.)

Tags: Research Support, Non-U.S. Gov't

Descriptors: \*Bacterial Outer Membrane Proteins--chemistry--CH; \***Helicobacter pylori**--physiology--PH; \*Lipopolysaccharides--chemistry--CH; \*Lipopolysaccharides--immunology--IM; Adhesins, Bacterial--chemistry--CH; Adhesins, Bacterial--physiology--PH; Animals; Bacterial Capsules--physiology--PH; Bacterial Outer Membrane Proteins--physiology--PH; Carbohydrate Sequence; Cell Wall--chemistry--CH; Cell Wall--physiology--PH; Heat-Shock Proteins--chemistry--CH; **Helicobacter pylori**--pathogenicity--PY; Humans; Molecular Sequence Data; **Porins**--chemistry--CH; **Porins**--immunology--IM; Rats

CAS Registry No.: 0 (Adhesins, Bacterial); 0 (Bacterial Capsules); 0 (Bacterial Outer Membrane Proteins); 0 (Heat-Shock Proteins); 0 (Lipopolysaccharides); 0 (Porins)

Record Date Created: 19950713

Record Date Completed: 19950713

9/9/4

DIALOG(R) File 155:MEDLINE(R)

(c) format only 2005 The Dialog Corp. All rts. reserv.

10899919 PMID: 7534278

**Isolation and characterization of a family of porin proteins from Helicobacter pylori.**

Exner M M; Doig P; Trust T J; Hancock R E

Department of Microbiology and Immunology, University of British Columbia, Vancouver, Canada.

Infection and immunity (UNITED STATES) Apr 1995, 63 (4) p1567-72, ISSN 0019-9567 Journal Code: 0246127

Contract/Grant No.: R01AI29927-01A2; AI; NIAID

Publishing Model Print

Document type: Journal Article

Languages: ENGLISH

Main Citation Owner: NLM

Record type: MEDLINE; Completed

Subfile: INDEX MEDICUS

Two-dimensional gel electrophoresis was used to identify heat-modifiable outer membrane proteins, which were candidates for **porins**, from **Helicobacter pylori** membrane preparations. Four such proteins with apparent molecular masses of 48, 49, 50, and 67 kDa were isolated. The four proteins copurified together after selective detergent solubilizations followed by anion-exchange chromatography, and each protein was ultimately purified to homogeneity by gel purification. These proteins were then tested for pore-forming ability with a planar lipid bilayer model membrane system. All four proteins appeared to be present as monomers, and they formed pores with low single-channel conductances in 1.0 M KCl of 0.36, 0.36, 0.30, and 0.25 nS, respectively, for the 48-, 49-, 50-, and 67-kDa proteins which we propose to designate HopA, HopB, HopC, and HopD. N-terminal amino acid sequence analyses showed a high degree of homology among all four proteins, and it appears that these proteins constitute a family of related **porins** in *H. pylori*.

Tags: Research Support, Non-U.S. Gov't; Research Support, U.S. Gov't, P.H.S.

Descriptors: \***Helicobacter pylori**--chemistry--CH; \* **Porins**--isolation and purification--IP; Amino Acid Sequence; Electric Conductivity; Electrophoresis, Gel, Two-Dimensional; Heat; **Helicobacter pylori**--physiology--PH; Ion Channels--chemistry--CH; Ion Channels--isolation and purification--IP; Molecular Sequence Data; Molecular Weight; Multigene



Family; **Porins** --chemistry--CH; Sequence Alignment; Sequence Homology, Amino Acid

CAS Registry No.: 0 (Ion Channels); 0 (Porins)

Gene Symbol: hopA; hopB; hopC; hopD

Record Date Created: 19950420

Record Date Completed: 19950420

9/9/5

DIALOG(R) File 155:MEDLINE(R)

(c) format only 2005 The Dialog Corp. All rts. reserv.

10721188 PMID: 7927718

**Identification of surface-exposed outer membrane antigens of Helicobacter pylori.**

Doig P; Trust T J

Department of Biochemistry and Microbiology, University of Victoria, British Columbia, Canada.

Infection and immunity (UNITED STATES) Oct 1994, 62 (10) p4526-33, ISSN 0019-9567 Journal Code: 0246127

Contract/Grant No.: 1R01AI29927-01A2; AI; NIAID

Publishing Model Print

Document type: Journal Article

Languages: ENGLISH

Main Citation Owner: NLM

Record type: MEDLINE; Completed

Subfile: INDEX MEDICUS

Despite the potential significance of surface-localized antigens in the colonization by and disease processes of **Helicobacter pylori**, few such components have been unequivocally identified and/or characterized. To further investigate the surface of this bacterium, monoclonal antibodies (MAbs) to a sarcosine-insoluble outer membrane fraction prepared from *H. pylori* NCTC 11637 were raised. MAbs were selected on the basis of their surface reactivity to whole cells by enzyme-linked immunosorbent assay, immunofluorescence, and immunoelectron microscopy. By use of this selection protocol, 14 surface-reactive MAbs were chosen. These MAbs were used to identify six protein antigens (molecular masses, 80, 60, 51, 50, 48, and 31 kDa), all of which were localized within or associated with the outer membrane. Two of the MAbs recognized the core region of lipopolysaccharide (LPS). Only these two anti-LPS MAbs also recognized the flagellar sheath, indicating a structural difference between the sheath and outer membrane. Three of the protein antigens (80, 60, and 51 kDa) were strain specific, while the other three antigens were present in other strains of *H. pylori*. Both the 51- and 48-kDa antigens were heat modifiable and likely are **porins**. A conserved 31-kDa protein may represent another species of **porin**. A method involving sucrose density ultracentrifugation and Triton extraction that allows the preparation of *H. pylori* outer membranes with minimal inner membrane contamination is described. Sodium dodecyl sulfate-polyacrylamide gel electrophoresis analysis showed that the protein content of the *H. pylori* outer membrane is similar structurally to those of other species of **Helicobacter** but markedly different from those of taxonomically related *Campylobacter* spp. and *Escherichia coli*. *H. pylori* also appeared to lack peptidoglycan-associated proteins.

Tags: Research Support, Non-U.S. Gov't; Research Support, U.S. Gov't, P.H.S.

Descriptors: \*Antigens, Bacterial--analysis--AN; \*Bacterial Outer Membrane Proteins--analysis--AN; \* **Helicobacter pylori**--immunology--IM; Animals; Antibodies, Monoclonal--immunology--IM; Antigens, Surface--analysis--AN; Mice; Mice, Inbred BALB C; Molecular Weight

CAS Registry No.: 0 (Antibodies, Monoclonal); 0 (Antigens, Bacterial)  
; 0 (Antigens, Surface); 0 (Bacterial Outer Membrane Proteins)  
Record Date Created: 19941104  
Record Date Completed: 19941104

9/9/6

DIALOG(R) File 155:MEDLINE(R)

(c) format only 2005 The Dialog Corp. All rts. reserv.

10540278 PMID: 8132346

**Immunobiological activities of Helicobacter pylori porins .**

Tufano M A; Rossano F; Catalanotti P; Liguori G; Capasso C; Ceccarelli M  
T; Marinelli P

Istituto di Microbiologia, Seconda Universita di Napoli, Italy.

Infection and immunity (UNITED STATES) Apr 1994, 62 (4) p1392-9,

ISSN 0019-9567 Journal Code: 0246127

Publishing Model Print

Document type: Journal Article

Languages: ENGLISH

Main Citation Owner: NLM

Record type: MEDLINE; Completed

Subfile: INDEX MEDICUS

Studies were carried out on some biological activities of **Helicobacter pylori porins** in vitro. We extracted and purified a **porin** with an apparent molecular mass of 30 kDa. Human polymorphonuclear leukocytes preincubated with **H. pylori porins** showed a decrease of chemotaxis, of adherence to nylon wool, and of chemiluminescence. Used as chemotaxins in place of zymosan-activated serum or as chemotaxinogens in place of zymosan, the **porins** induced polymorphonuclear leukocyte migration. Human monocytes and lymphocytes cultivated in the presence of **H. pylori porins** released cytokines. Release of the various cytokines studied was obtained with differentiated kinetics and at various **porin** concentrations. Starting only 3 h after culture, tumor necrosis factor alpha is released quickly, reaching a peak at 18 h, at a **porin** concentration of 1 microgram/ml/10(6) cells. Interleukin-6 (IL-6) appears later, with a peak at 10 micrograms/ml/10(6) cells, while IL-8 is released after 6 h of culture, with a peak at 24 h, at a **porin** concentration of 10 micrograms/ml/10(6) cells, while IL-8 is released after 6 h of culture, with a peak at 24 h, at a **porin** concentration of 10 micrograms/ml/10(6) cells. Lymphocytes stimulated by **H. pylori porins** release gamma interferon after 18 h of culture at higher concentrations of **porins** (20 micrograms/ml/10(6) cells). Granulocyte macrophage colony-stimulating factor is released from 6 to 48 h at a concentration of 1 microgram/ml/10(6) cells, while both IL-3 and IL-4 are released after 18 h of culture at different **porin** concentrations (0.1 and 1 microgram/ml/10(6) cells, respectively). Our results lead us to think that during **H. pylori** infection, surface components, **porins** in particular, are able to induce a series of chain reactions ranging from the inflammatory to the immunological responses.

Tags: Research Support, Non-U.S. Gov't

Descriptors: \***Helicobacter pylori**--pathogenicity--PY; \* **Porins**--pharmacology--PD; Chemotaxis, Leukocyte--drug effects--DE; Granulocyte-Macrophage Colony-Stimulating Factor--secretion--SE; Humans; Interleukins--secretion--SE; Lymphocytes--drug effects--DE; Lymphocytes--secretion--SE; Monocytes--drug effects--DE; Monocytes--secretion--SE; Neutrophils--drug effects--DE; Neutrophils--immunology--IM; Tumor Necrosis Factor-alpha--secretion--SE

CAS Registry No.: 0 (Interleukins); 0 (Porins); 0 (Tumor Necrosis

[Generate Collection](#)[Print](#)**Search Results - Record(s) 1 through 14 of 14 returned.**

- 
- ☐ 1. [6828298](#). 13 Apr 01; 07 Dec 04. Glycoprotein having inhibitory activity against helicobacter pylori colonization. Kodama; Yoshikatsu, et al. 514/8; 424/9.1 435/252.1 530/395 530/413. A61K038/16 A61K049/00.
- 
- ☐ 2. [6824975](#). 12 Oct 01; 30 Nov 04. Incorporation of selective binding substances in a solid phase assay device. Hubscher; Thomas T., et al. 435/4; 422/56 422/57 422/58 435/287.7 435/5 435/970 435/975 436/507 436/514 436/518 436/530 436/807 436/810 436/821. G01N033/53.
- 
- ☐ 3. [6797268](#). 13 Jul 01; 28 Sep 04. Pharmaceutical composition useful in the treatment of peptic ulcers. Kodama; Yoshikatsu, et al. 424/157.1; 514/339 514/371. A61K039/40 A61K031/44 A61K031/425.
- 
- ☐ 4. [6793921](#). 24 Jun 02; 21 Sep 04. Specific antibodies for use in preparation of pharmaceutical compositions useful in the prevention or treatment of gastritis, gastric ulcers and duodenal ulcers. Kodama; Yoshikatsu, et al. 424/157.1; 424/164.1 424/93.4 424/93.45 426/583 426/61 426/71 514/2 514/24 514/55 514/56 514/7 514/8. A61K039/40.
- 
- ☐ 5. [6576625](#). 16 Mar 01; 10 Jun 03. Targeted vesicular constructs for cytoprotection and treatment of H. pylori infections. Singh; Amarjit, et al. 514/78; 514/152 514/182 514/192. A61K031/685 A61K031/65 A61K031/56 A61K031/43.
- 
- ☐ 6. [6491956](#). 10 Oct 01; 10 Dec 02. Food containing active strains for inhibiting infection and treating gastritis, gastric and duodenal ulcers. Heo; Cheol Seong, et al. 426/71; 424/93.4 426/583 426/61. A01N063/00.
- 
- ☐ 7. [6468534](#). 21 Sep 00; 22 Oct 02. Methods for obtaining transfer factor from avian sources, compositions including avian-generated transfer factor, and methods of use. Hennen; William J., et al. 424/157.1; 424/130.1 424/184.1 424/201.1 424/204.1 424/227.1 435/41 530/300 530/350. A61K039/395 A61K039/00 A61K039/12 C12P001/00 C07K001/00.
- 
- ☐ 8. [6419926](#). 08 Apr 98; 16 Jul 02. Specific antibodies for use in preparation of pharmaceutical compositions useful in the prevention or treatment of gastritis, gastric ulcers and duodenal ulcers. Kodama; Yoshikatsu, et al. 424/157.1; 424/164.1 424/93.4 424/93.45. A61K039/395.
- 
- ☐ 9. [6329002](#). 07 Feb 00; 11 Dec 01. Food for inhibiting infection and treating gastritis, gastric and duodenal ulcers. Kim; Hyun Mi, et al. 426/71; 424/93.4 426/583 426/61. A01N063/00.
- 
- ☐ 10. [6306838](#). 24 Jan 00; 23 Oct 01. Targeted vesicular constructs for cyto protection and treatment of h. pylori. Singh; Amarjit, et al. 514/78; 514/152 514/182. A61K031/685 A61K031/65 A61K031/56.
- 
- ☐ 11. [6300316](#). 23 Aug 99; 09 Oct 01. C-4 substituted macrolide antibiotics. Brighty; Katherine E., et al. 514/29; 536/7.4. A61K031/70 C07H017/08.
- 
- ☐ 12. [6043226](#). 25 Feb 99; 28 Mar 00. 3,6-ketal and enol ether macrolide antibiotics. Lundy; Kristin Marie, et al. 514/29; 536/18.5 536/7.2 536/7.4. A61K031/70 C07H017/08.
-

☐ 13. 6025350. 29 Jul 98; 15 Feb 00. C-4" substituted macrolide antibiotics. Masamune; Hiroko, et al. 514/183; 540/454 540/455 540/457 549/266 549/270. A61K031/395 A61K031/33 C07D267/00.

---

☐ 14. 5607671. 14 Sep 94; 04 Mar 97. Medical use, a medical method and a pharmaceutical preparation. Heino; Pekka U.. 424/94.1; 424/457 424/94.6 424/94.61 424/94.62 424/94.63 514/198 540/336. A61K038/43 A61K038/46 A61K038/47 A61K038/48.

---

[Generate Collection](#)[Print](#)

Terms	Documents
(hen or bird or chicken or turkey or egg or yolk).clm. and (pylori or pyloris or pylroi or pylorum or pyloridis or pyloris or helicobacter or hpylori or h-pylori).clm.	14

[Prev Page](#)[Next Page](#)[Go to Doc#](#)

## WEST Search History

[Hide Items](#)[Restore](#)[Clear](#)[Cancel](#)

DATE: Tuesday, May 03, 2005

Hide?	<u>Set</u> <u>Name</u>	<u>Query</u>	<u>Hit</u> <u>Count</u>
		<i>DB=PGPB,USPT,USOC,EPAB,JPAB,DWPI,TDBD; PLUR=YES; OP=AND</i>	
<input type="checkbox"/>	L1	kit.clm.	31631
<input type="checkbox"/>	L2	L1 and (immune or immunoglobulin or immuno-globulin or antiporin or antibodies or igy or antisera or anti-sera or monospecific or mono-specific).clm.	7591
<input type="checkbox"/>	L3	L2 and (helicobacter or pylori or pyloris or pyloridis or pylorum).clm.	65
<input type="checkbox"/>	L4	L3 and (porin or bab or bab-a or bab-b or baba1 or bab-a1 or hop or hopA or hopB or hopE or hopz or hop-z or hop-q)	6

END OF SEARCH HISTORY

## WEST Search History

[Hide Items](#)[Restore](#)[Clear](#)[Cancel](#)

DATE: Tuesday, May 03, 2005

Hide?	<u>Set</u> <u>Name</u>	<u>Query</u>	<u>Hit</u> <u>Count</u>
		<i>DB=PGPB,USPT,USOC,EPAB,JPAB,DWPI,TDBD; PLUR=YES; OP=AND</i>	
<input type="checkbox"/>	L1	bab-a or baba or (blood near5 adhesin) or (blood near5 adhesion) or (blood near15 pylori)	29107
<input type="checkbox"/>	L2	bab-a or baba or (blood near5 adhesin) or (blood near5 adhesion)	28832
<input type="checkbox"/>	L3	(l1 or l2) and helicobact\$	402
<input type="checkbox"/>	L4	(l1 or l2) same helicobact\$	191
<input type="checkbox"/>	L5	bab-a or baba	25999
<input type="checkbox"/>	L6	l5 same helicobact\$	9

END OF SEARCH HISTORY

BAB A2  
Bab b  
Bab A  
Omp 28  
BabB/BabA1

20040234529. 22 Jan 04. 25 Nov 04. Helicobacter pylori adhesin binding group antigen. Boren, Thomas, et al. 424/164.1; 530/388.4 A61K039/40 C07K016/12.

☐ 2. 20040126811. 24 Dec 03. 01 Jul 04. Helicobacter pylori sialic acid binding adhesin, saba and saba-gene. Boren, Thomas, et al. 435/7.1; C12Q001/68 G01N033/53.

☐ 3. 20040053340. 24 Oct 03. 18 Mar 04. Protein arrays. De Haard, Johannes Joseph, et al. 435/7.2; 435/287.2 530/388.1 G01N033/53 G01N033/567 C12M001/34 C07K016/18.

☐ 4. 20030235818. 08 Apr 03. 25 Dec 03. Immunogenic peptides, and method of identifying same. Katritch, Vsevolod, et al. 435/5; 702/19 C12Q001/70 G06F019/00 G01N033/48 G01N033/50.

☐ 5. 20030180330. 29 Apr 03. 25 Sep 03. Method for identifying helicobacter antigens. Meyer, Thomas F, et al. 424/234.1; 435/7.32 530/350 G01N033/554 G01N033/569 A61K039/02 C07K014/195.

☐ 6. 6709656. 10 Feb 99; 23 Mar 04. Helicobacter pylori adhesin binding group antigen. Boren; Thomas, et al. 424/190.1; 424/184.1 424/234.1 435/252.1 435/7.32 514/25 530/350. A61K039/02.

☐ 7. 6576244. 18 Jun 99; 10 Jun 03. LT and CT in parenteral immunization methods against helicobacter infection. Weltzin; Richard A., et al. 424/234.1; 424/184.1 424/236.1 424/94.6 514/12 530/350 530/403. A61K039/02.

☐ 8. 6410719. 10 Feb 98; 25 Jun 02. Blood group antigen binding protein and corresponding agents. Boren; Thomas, et al. 536/23.7; 536/23.1. C07H021/04.

☐ 9. WO009747646A1. 10 Jun 97. 18 Dec 97. HELICOBACTER PYLORI ADHESIN BINDING GROUP ANTIGEN. BOREN, THOMAS, et al. C07K014/205; A61K039/106 C07K016/12.

Generate Collection

Print

Terms	Documents
L5 same helicobact\$	9

[Prev Page](#)

[Next Page](#)

[Go to Doc#](#)

**Adhesin binding fucosylated histo-  
blood group antigen**

Synonyms	None
Gene name	<b>Name: babA2</b>
From	<i>Helicobacter pylori</i> ( <i>Campylobacter pylori</i> ) [TaxID: 210]
Taxonomy	Bacteria; Proteobacteria; Epsilonproteobacteria; Campylobacterales; Helicobacteraceae; <i>Helicobacter</i>

1507



## WEST Search History

DATE: Tuesday, May 03, 2005

Hide?	<u>Set</u> <u>Name</u>	<u>Query</u>	<u>Hit</u> <u>Count</u>
		<i>DB=USPT; PLUR=YES; OP=AND</i>	
<input type="checkbox"/>	L1	anti-idioty\$ or antiidioty\$	3975
<input type="checkbox"/>	L2	L1 same lewis\$	22
<input type="checkbox"/>	L3	L1 same lewis\$	22
<input type="checkbox"/>	L4	(anti-idioty\$ or antiidioty\$).ti,ab.clm. and (lewis\$ or fucos\$).clm.	0
<input type="checkbox"/>	L5	(anti-idioty\$ or antiidioty\$).ti,ab.clm. and (lewis\$ or fucos\$ or lea or leb or le-b).clm.	0

END OF SEARCH HISTORY

FEMS Immunol Med Microbiol. 1994 May;8(4):315-20.

[Related Articles, Links](#)

**Isolation of an adhesin from *Staphylococcus aureus* that binds Lewis a blood group antigen and its relevance to sudden infant death syndrome.**

**Saadi AT, Weir DM, Poxton IR, Stewart J, Essery SD, Blackwell CC, Raza MW, Busuttill A.**

Department of Medical Microbiology, University of Edinburgh, Medical School, UK.

A 67 kDa protein was isolated from cell membrane preparations of *Staphylococcus aureus* (NCTC 10655) by affinity adsorption with synthetic Lewis a antigen conjugated to Synsorb beads. Pre-treatment of buccal epithelial cells expressing Lewis a with the purified protein reduced binding of the staphylococcal strain to a greater extent than the material not bound to the Synsorb beads. The significance of this work is discussed with reference to expression of Lewis a antigen in infants and the proposed role of toxigenic strains of staphylococci in some cases of sudden infant death syndrome.

Trends Microbiol. 1994 Jul;2(7):221-8.

[Related Articles, Links](#)

**Helicobacter pylori: molecular basis for host recognition and bacterial adherence.**

**Boren T, Normark S, Falk P.**

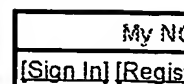
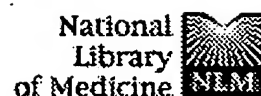
Dept of Molecular Microbiology, Washington University School of Medicine, St. Louis, MO 63110.

The bacterium *Helicobacter pylori* is tropic for epithelial cells and the mucus layer in the stomach lining, and is associated with the development of gastritis, ulcers and possibly also gastric malignancies. Adherence to the gastric epithelial cells is mediated by fucosylated blood-group antigens associated with blood-group O phenotype, which could explain the higher prevalence of ulcerative disease in individuals with this blood group.

Publication Types:

- Review
- Review, Tutorial

PMID: 8081648 [PubMed - indexed for MEDLINE]



All Databases PubMed Nucleotide Protein Genome Structure OMIM PMC Journals Book

Search PubMed for [ ] Go Clear

Limits Preview/Index History Clipboard Details

Display Abstract Show 20 Sort by Send to

All: 1 Review: 1 X

About Entrez

Text Version

Entrez PubMed

Overview

Help | FAQ

Tutorial

New/Noteworthy

E-Utilities

PubMed Services

Journals Database

MeSH Database

Single Citation Matcher

Batch Citation Matcher

Clinical Queries

Special Queries

LinkOut

My NCBI (Cubby)

1: Adv Exp Med Biol. 1996;408:129-40.

Related Articles, Links

## Interactions of bacterial adhesins with the extracellular matrix.

Ljungh A, Wadstrom T.

Department of Medical Microbiology, Lund University, Sweden.

Publication Types:

- Review
- Review, Tutorial

PMID: 8895785 [PubMed - indexed for MEDLINE]

Related Resources

Order Documents

NLM Catalog

NLM Gateway

TOXNET

Consumer Health

Clinical Alerts

ClinicalTrials.gov

PubMed Central

Display Abstract Show 20 Sort by Send to

[Write to the Help Desk](#)

[NCBI](#) | [NLM](#) | [NIH](#)

[Department of Health & Human Services](#)

[Privacy Statement](#) | [Freedom of Information Act](#) | [Disclaimer](#)

Apr 18 2005 07:10:12

Search	Most Recent Queries	Time	Resu
	<u>#28</u> Related Articles for PubMed (Select 15273394)	10:11:50	<u>48</u>
	<u>#25</u> Related Articles for PubMed (Select 9098001)	09:55:44	<u>28</u>
	<u>#21</u> Related Articles for PubMed (Select 10535999)	09:41:21	<u>18</u>
	<u>#19</u> Related Articles for PubMed (Select 11280745)	09:36:01	<u>110</u>
	<u>#18</u> Related Articles for PubMed (Select 12904430)	09:35:52	<u>48</u>
	<u>#17</u> Related Articles for PubMed (Select 12663641)	09:34:38	<u>110</u>
•	<u>#1</u> Related Articles for PubMed (Select 15557006)	09:33:34	<u>10</u>

SYSTEM:OS - DIALOG OneSearch  
File 155:MEDLINE(R) 1951-2005/May W1  
(c) format only 2005 The Dialog Corp.  
File 94:JICST-EPlus 1985-2005/Mar W3  
(c)2005 Japan Science and Tech Corp(JST)  
File 357:Derwent Biotech Res. 1982-2005/May W1  
(c) 2005 Thomson Derwent & ISI

Set	Items	Description
---	-----	-----
Cost is in DialUnits		
? ds		
Terminal set to DLINK		
? t s2/9/1-2		

Set	Items	Description
S1	3	FUCOS? (100N) (ANTIIDIOT? OR ANTI-IDIOTY?)
S2	3	RD (unique items)
? t s2/9/1-2		

2/9/1 (Item 1 from file: 155)  
DIALOG(R)File 155:MEDLINE(R)  
(c) format only 2005 The Dialog Corp. All rts. reserv.

05292331 PMID: 351065

**Studies on the question of conventional immunoglobulin on thymocytes from primitive vertebrates. II. Delineation between Ig-specific and cross-reactive membrane components.**

Yamaga K M; Kubo R T; Etlinger H M  
Journal of immunology (Baltimore, Md. - 1950) (UNITED STATES) Jun 1978,  
120 (6) p2074-9, ISSN 0022-1767 Journal Code: 2985117R  
Publishing Model Print  
Document type: Journal Article  
Languages: ENGLISH  
Main Citation Owner: NLM  
Record type: MEDLINE; Completed  
Subfile: AIM; INDEX MEDICUS  
Tags: Female; Male; Research Support, U.S. Gov't, P.H.S.  
Descriptors: \*Antibody Specificity; \*Cross Reactions; \*Immunoglobulins;  
\*Salmonidae--immunology--IM; \*T-Lymphocytes--immunology--IM; \*Trout  
--immunology--IM; Animals; Antibodies, Anti-Idiotypic; Fluorescent Antibody  
Technique; **Fucose** --pharmacology--PD; Hemocyanin--immunology--IM; Immune  
Sera--pharmacology--PD; Membrane Proteins--immunology--IM; Spleen  
--immunology--IM  
CAS Registry No.: 0 (Antibodies, Anti-Idiotypic); 0 (Immune Sera); 0  
(Immunoglobulins); 0 (Membrane Proteins); 3713-31-3 (Fucose);  
9013-72-3 (Hemocyanin)  
Record Date Created: 19780828  
Record Date Completed: 19780828

2/9/2 (Item 1 from file: 94)  
DIALOG(R)File 94:JICST-EPlus  
(c)2005 Japan Science and Tech Corp(JST). All rts. reserv.

00898266 JICST ACCESSION NUMBER: 89A0288646 FILE SEGMENT: JICST-E  
**Analysis of Vh genes which encode the variable region of monoclonal  
antibodies directed to cancer-associated carbohydrate antigens.**  
KANNAGI REIJI (1); ZENITA KOICHI (1); HIRASHIMA KUNIMI (1); TAKADA AKIKO

(1)

(1) Kyoto Univ., Faculty of Medicine  
Gan to Kagaku Ryoho (Japanese Journal of Cancer and Chemotherapy), 1989,  
VOL.16, NO.3 Pt.2, PAGE.662-679, FIG.10, TBL.6, REF.30  
JOURNAL NUMBER: Z0938AAH ISSN NO: 0385-0684  
UNIVERSAL DECIMAL CLASSIFICATION: 616-006-09 577.1:576.8.097.5  
LANGUAGE: Japanese COUNTRY OF PUBLICATION: Japan  
DOCUMENT TYPE: Journal  
ARTICLE TYPE: Review article  
MEDIA TYPE: Printed Publication

ABSTRACT: Immune responses against cancer-associated, carbohydrate antigens are investigated by studying idiotypic determinants of specific antibodies with monoclonal anti-idiotypic antibodies, and by analyzing the structure of VH genes which encode the V region of the anti-carbohydrate antibodies. Four syngenic **antiidiotypic** antibodies towards monoclonal antibodies which are specific to the sialyl Lewis A antigen and two kinds of SSEA-1 related antigens (sialyl SSEA-1 and **fucosyl SSEA-1**) were obtained. Antibodies directed to carbohydrate antigens were mostly of IgM isotype, indicating these antigens are T-independent antigens, while anti-idiotypic monoclonal antibodies directed to those antibodies were mostly of IgG isotype, suggesting that T cells participate actively in the anti-idiotypic response. The Northern blotting analysis of VH genes of monoclonal antibodies directed to negatively-charged carbohydrate antigens such as gangliosides or sulfated glycolipids expressed the VH gene family J558 (group 1), followed by J606 (group 6) and Q52 (group 2) families. On the other hand, monoclonal antibodies directed to SSEA-1 related neutral carbohydrate antigens expressed VH genes of a minor family such as X24 (group 4), V31 (group 9), or 7183 (group 5). The same VH family as expressed in anti-SSEA-1 antibody (x24) was also expressed in the antibodies such as anti-I antibodies, which are directed to the synthetic precursors of the SSEA-1 antigen. In either case, the antibodies directed to one particular carbohydrate antigen tended to express the VH gene of one particular family exclusively. This suggests idiotypical homogeneity of the anti-carbohydrate antibodies. (author abst.)

DESCRIPTORS: tumor antigen; monoclonal antibody; idio type; tumor cell; immunotherapy; species specificity; epitope; CD15 antigen  
BROADER DESCRIPTORS: antigen; antibody; idioblast; cell(cytology); therapy; biological comparison; comparison; differentiation antigen; surface antigen  
CLASSIFICATION CODE(S): GE02030N; ED02030I  
? t s2/3,kwic/3

2/3,KWIC/3 (Item 1 from file: 357)

DIALOG(R) File 357: Derwent Biotech Res.  
(c) 2005 Thomson Derwent & ISI. All rts. reserv.

0124761 DBR Accession No.: 91-12403 PATENT  
Gene encoding monoclonal antibody FH-2 variable region - glycochain antigen  
SSEA-1, fucosyl SSEA-1, paragloboside FH-2, AH-6, 1B2 variable region  
production; DNA sequence; anti-idiotype antibody production; cancer  
screening, diagnosis  
PATENT ASSIGNEE: Otsuka-Pharm. 1991  
PATENT NUMBER: JP 3147788 PATENT DATE: 910624 WPI ACCESSION NO.:  
91-227678 (9131)  
PRIORITY APPLIC. NO.: JP 89285574 APPLIC. DATE: 891031  
NATIONAL APPLIC. NO.: JP 89285574 APPLIC. DATE: 890131  
LANGUAGE: Japanese

DESCRIPTORS: cancer-associated glycochain antigen SSEA-1, fucosyl SSEA-1,  
paragloboside-specific monoclonal antibody FH-2, AH-6, 1B2 variable  
region prep., gene...

? logoff hold

```
03may05 15:32:44 User228206 Session D2436.14
$0.21      0.066 DialUnits File155
    $0.21  1 Type(s) in Format  9
    $0.21  1 Types
$0.42 Estimated cost File155
    $0.46      0.133 DialUnits File94
    $1.35  1 Type(s) in Format  9
    $1.35  1 Types
$1.81 Estimated cost File94
    $2.80      0.133 DialUnits File357
    $2.45  1 Type(s) in Format  3
    $2.45  1 Types
$5.25 Estimated cost File357
    OneSearch, 3 files,  0.332 DialUnits FileOS
$0.26 TELNET
$7.74 Estimated cost this search
$7.74 Estimated total session cost  0.332 DialUnits
```

Logoff: level 05.02.01 D 15:32:44

You are now logged off



## WEST Search History





DATE: Tuesday, May 03, 2005

**Hide? Set Name Query****Hit Count***DB=PGPB,USPT,USOC,EPAB,JPAB,DWPI,TDBD; PLUR=YES; OP=AND*

<input type="checkbox"/>	L1	durrant.in.	360
<input type="checkbox"/>	L2	L1 and lewis\$	4
<input type="checkbox"/>	L3	(leb or le-b).clm. and (antiidiot\$ or anti-idiot\$)	0
<input type="checkbox"/>	L4	lewis-b.clm. and (antiidiot\$ or anti-idiot\$)	0

*DB=PGPB; PLUR=YES; OP=AND*

<input type="checkbox"/>	L5	20020098166	1
--------------------------	----	-------------	---

*DB=PGPB,USPT,USOC,EPAB,JPAB,DWPI,TDBD; PLUR=YES; OP=AND*

<input type="checkbox"/>	L6	lewis\$ near5 antigen\$	1044
<input type="checkbox"/>	L7	L6 and (antiidiot\$ or anti-idiot\$)	209
<input type="checkbox"/>	L8	L6 same (antiidiot\$ or anti-idiot\$)	18
<input type="checkbox"/>	L9	(lewis-b or lewisb or leb or le-b) near25 (antigen or blood or erythrocyte)	21

END OF SEARCH HISTORY

*Spencer Notland*

[ExPASy Home page](#) [Site Map](#) [Search ExPASy](#) [Contact us](#) [Proteomics tools](#) [Swiss-Prot](#)

Search  for

=====

Welcome to the SIB BLAST Network Service

If results of this search are reported or published, please mention that the computation was performed at the SIB using the BLAST network service. The SIB BLAST network service uses a server developed at SIB and the NCBI BLAST 2 software.

In case of problems, please read the [online BLAST help](#).  
If your question is not covered, please contact [<helpdesk@expasy.org>](mailto:helpdesk@expasy.org).

NCBI BLAST program reference [PMID:9254694]:

Altschul S.F., Madden T.L., Schäffer A.A., Zhang J., Zhang Z., Miller W., Lipman D.J. Gapped BLAST and PSI-BLAST: a new generation of protein database search programs. Nucleic Acids Res. 25:3389-3402(1997).

=====

Query: 744 AA (of which 7% low-complexity regions filtered out)

Date run: 2005-05-03 09:14:04 UTC+0100 on sib-gml.unil.ch

Program: NCBI BLASTP 1.5.4-Paracel [2003-06-05]

Database: EXPASY/UniProtKB

1,880,849 sequences; 604,459,357 total letters

UniProt Release 4.6 consists of: Swiss-Prot Release 46.6 of 26-Apr-2005: 180652 en  
TrEMBL Release 29.6 of 26-Apr-2005: 1689375 entrie

[Taxonomic view](#)

[NiceBlast view](#)

[Printable view](#)

List of potentially matching sequences

Send selected sequences to

☐ Include query sequence

Db	AC	Description	Score	E-value
<input type="checkbox"/>	tr <a href="#">Q9ZKV2</a>	_HELPI Outer membrane protein-adhesin [babA] [Helicobac...	<a href="#">1382</a>	0.0
<input type="checkbox"/>	tr <a href="#">Q6T8D3</a>	_HELPI BabA [Helicobacter pylori (Campylobacter pylori)]	<a href="#">1281</a>	0.0
<input type="checkbox"/>	tr <a href="#">Q7WV80</a>	_HELPI Adhesin-binding fucosylated histo-blood group an...	<a href="#">1265</a>	0.0
<input type="checkbox"/>	tr <a href="#">Q7WV81</a>	_HELPI Adhesin-binding fucosylated histo-blood group an...	<a href="#">1262</a>	0.0
<input type="checkbox"/>	tr <a href="#">Q25840</a>	_HELPI Outer membrane protein (Omp28) [HP1243] [Helicob...	<a href="#">1258</a>	0.0
<input type="checkbox"/>	tr <a href="#">Q7WV79</a>	_HELPI Adhesin-binding fucosylated histo-blood group an...	<a href="#">1252</a>	0.0
<input type="checkbox"/>	tr <a href="#">Q52269</a>	_HELPI Adhesin binding fucosylated histo-blood group an...	<a href="#">1242</a>	0.0
<input type="checkbox"/>	tr <a href="#">Q7WV84</a>	_HELPI Adhesin-binding fucosylated histo-blood group an...	<a href="#">1241</a>	0.0
<input type="checkbox"/>	tr <a href="#">Q5Q1P2</a>	_HELPI BabB/BabA1 fusion protein 1 (Fragment) [babB/bab...	<a href="#">1217</a>	0.0
<input type="checkbox"/>	tr <a href="#">Q6JAA0</a>	_HELPI Adhesin-binding fucosylated histo-blood group an...	<a href="#">1215</a>	0.0


<input type="checkbox"/>	tr	<a href="#">Q7WV83</a>	_HELPHY	Adhesin-binding fucosylated histo-blood group an...	<a href="#">1214</a>	0.0
<input type="checkbox"/>	tr	<a href="#">Q7WV78</a>	_HELPHY	Adhesin-binding fucosylated histo-blood group an...	<a href="#">1212</a>	0.0
<input type="checkbox"/>	tr	<a href="#">Q7WV75</a>	_HELPHY	Adhesin-binding fucosylated histo-blood group an...	<a href="#">1212</a>	0.0
<input type="checkbox"/>	tr	<a href="#">Q5Q1P1</a>	_HELPHY	BabB/BabA1 fusion protein 2 (Fragment) [babB/bab...	<a href="#">1212</a>	0.0
<input type="checkbox"/>	tr	<a href="#">Q7WV76</a>	_HELPHY	Adhesin-binding fucosylated histo-blood group an...	<a href="#">1212</a>	0.0
<input type="checkbox"/>	tr	<a href="#">Q6JA97</a>	_HELPHY	Adhesin-binding fucosylated histo-blood group an...	<a href="#">1212</a>	0.0
<input type="checkbox"/>	tr	<a href="#">Q7WV74</a>	_HELPHY	Adhesin-binding fucosylated histo-blood group an...	<a href="#">1207</a>	0.0
<input type="checkbox"/>	tr	<a href="#">Q6JA99</a>	_HELPHY	Adhesin-binding fucosylated histo-blood group an...	<a href="#">1206</a>	0.0
<input type="checkbox"/>	tr	<a href="#">Q7WV73</a>	_HELPHY	Adhesin-binding fucosylated histo-blood group an...	<a href="#">1198</a>	0.0
<input type="checkbox"/>	tr	<a href="#">Q7WV77</a>	_HELPHY	Adhesin-binding fucosylated histo-blood group an...	<a href="#">1197</a>	0.0
<input type="checkbox"/>	tr	<a href="#">Q9R7I4</a>	_HELPHY	Adhesin-binding fucosylated histo-blood group an...	<a href="#">1196</a>	0.0
<input type="checkbox"/>	tr	<a href="#">Q7WV72</a>	_HELPHY	Adhesin-binding fucosylated histo-blood group an...	<a href="#">1196</a>	0.0
<input type="checkbox"/>	tr	<a href="#">Q6JA98</a>	_HELPHY	Adhesin-binding fucosylated histo-blood group an...	<a href="#">1193</a>	0.0
<input type="checkbox"/>	tr	<a href="#">Q7WV85</a>	_HELPHY	Adhesin-binding fucosylated histo-blood group an...	<a href="#">1191</a>	0.0
<input type="checkbox"/>	tr	<a href="#">Q7WV68</a>	_HELPHY	Adhesin-binding fucosylated histo-blood group an...	<a href="#">1185</a>	0.0
<input type="checkbox"/>	tr	<a href="#">Q7WV69</a>	_HELPHY	Adhesin-binding fucosylated histo-blood group an...	<a href="#">1185</a>	0.0
<input type="checkbox"/>	tr	<a href="#">Q7WV67</a>	_HELPHY	Adhesin-binding fucosylated histo-blood group an...	<a href="#">1184</a>	0.0
<input type="checkbox"/>	tr	<a href="#">Q7WV71</a>	_HELPHY	Adhesin-binding fucosylated histo-blood group an...	<a href="#">1183</a>	0.0
<input type="checkbox"/>	tr	<a href="#">Q6JAA1</a>	_HELPHY	Adhesin-binding fucosylated histo-blood group an...	<a href="#">1182</a>	0.0
<input type="checkbox"/>	tr	<a href="#">Q7WV82</a>	_HELPHY	Adhesin-binding fucosylated histo-blood group an...	<a href="#">1171</a>	0.0
<input type="checkbox"/>	tr	<a href="#">Q7WV66</a>	_HELPHY	Adhesin-binding fucosylated histo-blood group an...	<a href="#">1160</a>	0.0
<input type="checkbox"/>	tr	<a href="#">Q7WV70</a>	_HELPHY	Adhesin-binding fucosylated histo-blood group an...	<a href="#">1157</a>	0.0
<input type="checkbox"/>	tr	<a href="#">Q25086</a>	_HELPHY	Outer membrane protein (Omp9) [HP0317] [Helicoba...	<a href="#">917</a>	0.0
<input type="checkbox"/>	tr	<a href="#">O51811</a>	_HELPHY	Adhesin-binding fucosylated histo-blood group an...	<a href="#">875</a>	0.0
<input type="checkbox"/>	tr	<a href="#">Q7WVA2</a>	_HELPHY	Adhesin-binding fucosylated histo-blood group an...	<a href="#">868</a>	0.0
<input type="checkbox"/>	tr	<a href="#">Q7WVA4</a>	_HELPHY	Adhesin-binding fucosylated histo-blood group an...	<a href="#">864</a>	0.0
<input type="checkbox"/>	tr	<a href="#">Q9ZJY3</a>	_HELPHJ	Outer membrane protein-adhesin [babB] [Helicobac...	<a href="#">862</a>	0.0
<input type="checkbox"/>	tr	<a href="#">Q6T8D5</a>	_HELPHY	BabB (BabB2) [Helicobacter pylori (Campylobacter...	<a href="#">860</a>	0.0
<input type="checkbox"/>	tr	<a href="#">Q25556</a>	_HELPHY	Outer membrane protein (Omp19) [HP0896] [Helicob...	<a href="#">860</a>	0.0
<input type="checkbox"/>	tr	<a href="#">Q7WVA1</a>	_HELPHY	Adhesin-binding fucosylated histo-blood group an...	<a href="#">857</a>	0.0
<input type="checkbox"/>	tr	<a href="#">Q7WVA0</a>	_HELPHY	Adhesin-binding fucosylated histo-blood group an...	<a href="#">845</a>	0.0
<input type="checkbox"/>	tr	<a href="#">Q7WVA3</a>	_HELPHY	Adhesin-binding fucosylated histo-blood group an...	<a href="#">844</a>	0.0
<input type="checkbox"/>	tr	<a href="#">Q7WV97</a>	_HELPHY	Adhesin-binding fucosylated histo-blood group an...	<a href="#">844</a>	0.0
<input type="checkbox"/>	tr	<a href="#">Q7WVA5</a>	_HELPHY	Adhesin-binding fucosylated histo-blood group an...	<a href="#">839</a>	0.0
<input type="checkbox"/>	tr	<a href="#">Q7WV95</a>	_HELPHY	Adhesin-binding fucosylated histo-blood group an...	<a href="#">839</a>	0.0
<input type="checkbox"/>	tr	<a href="#">Q7WV99</a>	_HELPHY	Adhesin-binding fucosylated histo-blood group an...	<a href="#">838</a>	0.0
<input type="checkbox"/>	tr	<a href="#">Q7WV98</a>	_HELPHY	Adhesin-binding fucosylated histo-blood group an...	<a href="#">838</a>	0.0
<input type="checkbox"/>	tr	<a href="#">Q7WV93</a>	_HELPHY	Adhesin-binding fucosylated histo-blood group an...	<a href="#">835</a>	0.0
<input type="checkbox"/>	tr	<a href="#">Q7WV94</a>	_HELPHY	Adhesin-binding fucosylated histo-blood group an...	<a href="#">831</a>	0.0
<input type="checkbox"/>	tr	<a href="#">Q7WV88</a>	_HELPHY	Adhesin-binding fucosylated histo-blood group an...	<a href="#">829</a>	0.0
<input type="checkbox"/>	tr	<a href="#">Q7WV96</a>	_HELPHY	Adhesin-binding fucosylated histo-blood group an...	<a href="#">827</a>	0.0
<input type="checkbox"/>	tr	<a href="#">Q7WV86</a>	_HELPHY	Adhesin-binding fucosylated histo-blood group an...	<a href="#">823</a>	0.0
<input type="checkbox"/>	tr	<a href="#">Q7WV92</a>	_HELPHY	Adhesin-binding fucosylated histo-blood group an...	<a href="#">821</a>	0.0
<input type="checkbox"/>	tr	<a href="#">Q7WV89</a>	_HELPHY	Adhesin-binding fucosylated histo-blood group an...	<a href="#">818</a>	0.0
<input type="checkbox"/>	tr	<a href="#">Q7WV90</a>	_HELPHY	Adhesin-binding fucosylated histo-blood group an...	<a href="#">817</a>	0.0

<input type="checkbox"/>	tr <a href="#">Q7WV91</a>	_HELPHY Adhesin-binding fucosylated histo-blood group an...	<a href="#">814</a>	0.0
<input type="checkbox"/>	tr <a href="#">Q7WV87</a>	_HELPHY Adhesin-binding fucosylated histo-blood group an...	<a href="#">813</a>	0.0
<input type="checkbox"/>	tr <a href="#">Q9X746</a>	_HELPHY HopZ protein precursor [hopZ] [Helicobacter pylo...	<a href="#">694</a>	0.0
<input type="checkbox"/>	tr <a href="#">Q9X748</a>	_HELPHY HopZ protein precursor [hopZ] [Helicobacter pylo...	<a href="#">690</a>	0.0
<input type="checkbox"/>	tr <a href="#">Q9S3I7</a>	_HELPHY HopZ protein precursor [hopZ] [Helicobacter pylo...	<a href="#">690</a>	0.0
<input type="checkbox"/>	tr <a href="#">Q9ZN51</a>	_HELPHJ Putative Outer membrane protein [JHP0007] [Helic...	<a href="#">689</a>	0.0
<input type="checkbox"/>	tr <a href="#">Q9X747</a>	_HELPHY HopZ protein precursor [hopZ] [Helicobacter pylo...	<a href="#">687</a>	0.0
<input type="checkbox"/>	tr <a href="#">Q9X745</a>	_HELPHY HopZ protein precursor [hopZ] [Helicobacter pylo...	<a href="#">683</a>	0.0
<input type="checkbox"/>	tr <a href="#">Q9ZN38</a>	_HELPHJ Putative Outer membrane protein [JHP0021] [Helic...	<a href="#">681</a>	0.0
<input type="checkbox"/>	tr <a href="#">Q24870</a>	_HELPHY Outer membrane protein (Omp2) [HP0025] [Helicoba...	<a href="#">673</a>	0.0
<input type="checkbox"/>	tr <a href="#">Q34523</a>	_HELPHY Outer membrane protein (Omp29) (Omp5) [HP0227] [...]	<a href="#">636</a>	0.0
<input type="checkbox"/>	tr <a href="#">Q9Z390</a>	_HELPHJ Putative Outer membrane protein [JHP0212] [Helic...	<a href="#">622</a>	e-176
<input type="checkbox"/>	tr <a href="#">Q8GDI6</a>	_HELPHY HopQ [hopQ] [Helicobacter pylori (Campylobacter ...]	<a href="#">545</a>	e-153
<input type="checkbox"/>	tr <a href="#">Q8GDJ1</a>	_HELPHY HopQ [hopQ] [Helicobacter pylori (Campylobacter ...]	<a href="#">545</a>	e-153
<input type="checkbox"/>	tr <a href="#">Q8GDI7</a>	_HELPHY HopQ [hopQ] [Helicobacter pylori (Campylobacter ...]	<a href="#">545</a>	e-153
<input type="checkbox"/>	tr <a href="#">Q8GDI8</a>	_HELPHY HopQ [hopQ] [Helicobacter pylori (Campylobacter ...]	<a href="#">540</a>	e-152
<input type="checkbox"/>	tr <a href="#">Q8GDJ2</a>	_HELPHY HopQ [hopQ] [Helicobacter pylori (Campylobacter ...]	<a href="#">537</a>	e-151
<input type="checkbox"/>	tr <a href="#">Q8GDJ3</a>	_HELPHY HopQ [hopQ] [Helicobacter pylori (Campylobacter ...]	<a href="#">532</a>	e-150
<input type="checkbox"/>	tr <a href="#">Q8GDJ4</a>	_HELPHY HopQ [hopQ] [Helicobacter pylori (Campylobacter ...]	<a href="#">526</a>	e-148
<input type="checkbox"/>	tr <a href="#">Q9ZK39</a>	_HELPHJ Putative Outer membrane function [JHP1103] [Heli...	<a href="#">512</a>	e-143
<input type="checkbox"/>	tr <a href="#">Q8GDI9</a>	_HELPHY HopQ [hopQ] [Helicobacter pylori (Campylobacter ...]	<a href="#">506</a>	e-142
<input type="checkbox"/>	tr <a href="#">Q25791</a>	_HELPHY Outer membrane protein (Omp27) [HP1177] [Helicob...	<a href="#">496</a>	e-138
<input type="checkbox"/>	tr <a href="#">Q8GDJ0</a>	_HELPHY HopQ [hopQ] [Helicobacter pylori (Campylobacter ...]	<a href="#">495</a>	e-138
<input type="checkbox"/>	tr <a href="#">Q6DSZ4</a>	_HELPHY Adhesin (Fragment) [babA] [Helicobacter pylori (...]	<a href="#">445</a>	e-123
<input type="checkbox"/>	tr <a href="#">Q6DSZ1</a>	_HELPHY Adhesin (Fragment) [babA] [Helicobacter pylori (...]	<a href="#">437</a>	e-121
<input type="checkbox"/>	tr <a href="#">Q6DSY5</a>	_HELPHY Adhesin (Fragment) [babA] [Helicobacter pylori (...]	<a href="#">429</a>	e-118
<input type="checkbox"/>	tr <a href="#">Q6DSZ8</a>	_HELPHY Adhesin (Fragment) [babA] [Helicobacter pylori (...]	<a href="#">427</a>	e-118
<input type="checkbox"/>	tr <a href="#">Q6DSX1</a>	_HELPHY Adhesin (Fragment) [babA] [Helicobacter pylori (...]	<a href="#">422</a>	e-116
<input type="checkbox"/>	tr <a href="#">Q6DSZ6</a>	_HELPHY Adhesin (Fragment) [babA] [Helicobacter pylori (...]	<a href="#">419</a>	e-116
<input type="checkbox"/>	tr <a href="#">Q6DSY9</a>	_HELPHY Adhesin (Fragment) [babA] [Helicobacter pylori (...]	<a href="#">418</a>	e-115
<input type="checkbox"/>	tr <a href="#">Q6DSY0</a>	_HELPHY Adhesin (Fragment) [babA] [Helicobacter pylori (...]	<a href="#">416</a>	e-115
<input type="checkbox"/>	tr <a href="#">Q6DSY7</a>	_HELPHY Adhesin (Fragment) [babA] [Helicobacter pylori (...]	<a href="#">415</a>	e-114
<input type="checkbox"/>	tr <a href="#">Q6DSY6</a>	_HELPHY Adhesin (Fragment) [babA] [Helicobacter pylori (...]	<a href="#">412</a>	e-113
<input type="checkbox"/>	tr <a href="#">Q6DT16</a>	_HELPHY Adhesin (Fragment) [babA] [Helicobacter pylori (...]	<a href="#">404</a>	e-111
<input type="checkbox"/>	tr <a href="#">Q6DSX0</a>	_HELPHY Adhesin (Fragment) [babA] [Helicobacter pylori (...]	<a href="#">404</a>	e-111
<input type="checkbox"/>	tr <a href="#">Q6DT06</a>	_HELPHY Adhesin (Fragment) [babA] [Helicobacter pylori (...]	<a href="#">402</a>	e-110
<input type="checkbox"/>	tr <a href="#">Q6DT01</a>	_HELPHY Adhesin (Fragment) [babA] [Helicobacter pylori (...]	<a href="#">400</a>	e-110
<input type="checkbox"/>	tr <a href="#">Q6DSZ0</a>	_HELPHY Adhesin (Fragment) [babA] [Helicobacter pylori (...]	<a href="#">398</a>	e-109
<input type="checkbox"/>	tr <a href="#">Q6DSZ9</a>	_HELPHY Adhesin (Fragment) [babA] [Helicobacter pylori (...]	<a href="#">396</a>	e-108
<input type="checkbox"/>	tr <a href="#">Q6DSZ7</a>	_HELPHY Adhesin (Fragment) [babA] [Helicobacter pylori (...]	<a href="#">393</a>	e-108
<input type="checkbox"/>	tr <a href="#">Q6DSZ3</a>	_HELPHY Adhesin (Fragment) [babA] [Helicobacter pylori (...]	<a href="#">390</a>	e-107
<input type="checkbox"/>	tr <a href="#">Q6DT04</a>	_HELPHY Adhesin (Fragment) [babA] [Helicobacter pylori (...]	<a href="#">389</a>	e-106
<input type="checkbox"/>	tr <a href="#">Q6DSX3</a>	_HELPHY Adhesin (Fragment) [babA] [Helicobacter pylori (...]	<a href="#">388</a>	e-106
<input type="checkbox"/>	tr <a href="#">Q6DSZ2</a>	_HELPHY Adhesin (Fragment) [babA] [Helicobacter pylori (...]	<a href="#">387</a>	e-106
<input type="checkbox"/>	tr <a href="#">Q6DSW8</a>	_HELPHY Adhesin (Fragment) [babA] [Helicobacter pylori (...]	<a href="#">387</a>	e-106

## Graphical overview of the alignments

[Click here](#)

to resubmit your query after masking regions matching PROSITE profiles  
or Pfam HMMs

( [Help](#)) (use [ScanProsite](#) for more details about PROSITE matches)

Profile hits

Pfam hits

HP\_OMP

Submission	Matches on query sequence		Mat
	1	500	
Q9ZKV2			
Q6T8D3			
Q7MV80			
Q7MV81			
Q25840			
Q7MV79			
Q52269			
Q7MV84			
Q5Q1P2			
Q6JAA8			
Q7MV83			
Q7MV78			
Q7MV75			
Q5Q1P1			
Q7MV76			
Q6JAA7			
Q7MV74			
Q6JAA9			
Q7MV73			
Q7MV77			
Q9R7I4			
Q7MV72			
Q6JAA8			
Q7MV85			
Q7MV68			
Q7MV69			
Q7MV67			
Q7MV71			
Q6JAA1			
Q7MV82			
Q7MV66			
Q7MV70			
Q25086			
Q51811			
Q7MVA2			
Q7MVA4			
Q9ZJY3			
Q6T8D5			
Q25556			
Q7MVA1			
Q7MVA0			
Q7MVA3			
Q7MV97			
Q7MVA5			
Q7MV95			
Q7MV99			
Q7MV98			
Q7MV93			
Q7MV94			
Q7MV88			
Q7MV96			
Q7MV86			
Q7MV92			
Q7MV89			
Q7MV90			
Q7MV91			
Q7MV87			
Q9X746			
Q9X748			
Q9S3I7			
Q9ZN51			
Q9X747			
Q9X745			
Q9ZN38			
Q24870			
Q34523			
Q9Z390			
Q8GDI6			
Q8GDJ1			
Q8GDI7			
Q8GDI8			
Q8GDJ2			
Q8GDJ3			
Q8GDJ4			
Q9ZK39			
Q8GDI9			
Q25791			
Q8GDJ0			
Q6DSZ4			
Q6DSZ1			
Q6DSY5			
Q6DSZ8			
Q6DSX1			
Q6DSZ6			
Q6DSY9			
Q6DSY0			

## Alignments

tr Q9ZKV2 Outer membrane protein-adhesin [babA] [Helicobacter 744  
 Q9ZKV2\_HELPJ pylori J99 AA  
 (Campylobacter pylori J99)] align

Score = 1382 bits (3577), Expect = 0.0  
 Identities = 692/744 (93%), Positives = 692/744 (93%)

```

Query: 1  MKKHIXXXXXXXXXXXXXAEDDGFYTSVGYQIGEEAQMVTNTKGIQDLSDRYESLNNLL 60
          MKKHI                      AEDDGFYTSVGYQIGEEAQMVTNTKGIQDLSDRYESLNNLL
Sbjct: 1  MKKHILSLTEGSLLVSTLSAEDDGFYTSVGYQIGEEAQMVTNTKGIQDLSDRYESLNNLL 60

Query: 61  NRYSTLNTLIKLSADPSAINAVRENLGASAKNLIGDKANSPAYQAVLLAINAAVGFWNVV 120
          NRYSTLNTLIKLSADPSAINAVRENLGASAKNLIGDKANSPAYQAVLLAINAAVGFWNVV
Sbjct: 61  NRYSTLNTLIKLSADPSAINAVRENLGASAKNLIGDKANSPAYQAVLLAINAAVGFWNVV 120

Query: 121 GYVTQCGGNANGQKSISSTIFNNEPGYRSTSITCSLNGHSPGYYGPMSENFKKLNEAY 180
          GYVTQCGGNANGQKSISSTIFNNEPGYRSTSITCSLNGHSPGYYGPMSENFKKLNEAY
Sbjct: 121 GYVTQCGGNANGQKSISSTIFNNEPGYRSTSITCSLNGHSPGYYGPMSENFKKLNEAY 180

Query: 181 QILQTALKRGLPALKENNGKVNVTYTYTCSGDGNNNCSSQVTGVNNQKDGTCTKIQTIDG 240
          QILQTALKRGLPALKENNGKVNVTYTYTCSGDGNNNCSSQVTGVNNQKDGTCTKIQTIDG
Sbjct: 181 QILQTALKRGLPALKENNGKVNVTYTYTCSGDGNNNCSSQVTGVNNQKDGTCTKIQTIDG 240

Query: 241 KSVTTTISISKVVDSRADGNTTGVSYTEITNKLEGVPDXXXXXXXXXXTLINTINNACPYF 300
          KSVTTTISISKVVDSRADGNTTGVSYTEITNKLEGVPD          TLINTINNACPYF
Sbjct: 241 KSVTTTISISKVVDSRADGNTTGVSYTEITNKLEGVPDSAQALLAQASTLINTINNACPYF 300

Query: 301 HASNSSEANAPKFSTTTGKICGAFSEEISAIQKMITDAQELVNQTSVINEHEQTTPVGNN 360
          HASNSSEANAPKFSTTTGKICGAFSEEISAIQKMITDAQELVNQTSVINEHEQTTPVGNN
Sbjct: 301 HASNSSEANAPKFSTTTGKICGAFSEEISAIQKMITDAQELVNQTSVINEHEQTTPVGNN 360

Query: 361 NGKPFNPFTDASFAQGMLANASQAQKMLNLAEQVGQAINPERLSGTFQNFVKGFLATCNN 420
          NGKPFNPFTDASFAQGMLANASQAQKMLNLAEQVGQAINPERLSGTFQNFVKGFLATCNN
Sbjct: 361 NGKPFNPFTDASFAQGMLANASQAQKMLNLAEQVGQAINPERLSGTFQNFVKGFLATCNN 420

Query: 421 XXXXXXXXXXXXXXXXVTTQTTFASGCAYVGQTITNLKNSIAHFGTXXXXXXXXXXXXDTL 480
          VTTQTTFASGCAYVGQTITNLKNSIAHFGT          DTL
Sbjct: 421 PSTAGTGGTQGSAPGTVTTQTTFASGCAYVGQTITNLKNSIAHFGTQEQQIQQAENIADTL 480

Query: 481 VNFKSRYSSELGNTYNSITTALSNIIPNAQSLQNAVSKKNNPYPSPQGIDTNYLLNQNSYNQI 540
          VNFKSRYSSELGNTYNSITTALSNIIPNAQSLQNAVSKKNNPYPSPQGIDTNYLLNQNSYNQI
Sbjct: 481 VNFKSRYSSELGNTYNSITTALSNIIPNAQSLQNAVSKKNNPYPSPQGIDTNYLLNQNSYNQI 540

Query: 541 QTINQELGRNPFRKVGIVSSQTNNGAMNGIGIQVGYKQFFGQKRKWGARYYGFFDYNHAF 600
          QTINQELGRNPFRKVGIVSSQTNNGAMNGIGIQVGYKQFFGQKRKWGARYYGFFDYNHAF
Sbjct: 541 QTINQELGRNPFRKVGIVSSQTNNGAMNGIGIQVGYKQFFGQKRKWGARYYGFFDYNHAF 600

Query: 601 IKSSFFNSASDVWTYGFGADALYNFINDKATNFLGKNNKLSVGLFGGIALAGTSWLNSEY 660
          IKSSFFNSASDVWTYGFGADALYNFINDKATNFLGKNNKLSVGLFGGIALAGTSWLNSEY
Sbjct: 601 IKSSFFNSASDVWTYGFGADALYNFINDKATNFLGKNNKLSVGLFGGIALAGTSWLNSEY 660

Query: 661 VNLATMNNVYNAKMNVANFQFLFNMGVRMNLARPKKKSDHAAQHGIELGLKIPTINTNY 720
          VNLATMNNVYNAKMNVANFQFLFNMGVRMNLARPKKKSDHAAQHGIELGLKIPTINTNY
Sbjct: 661 VNLATMNNVYNAKMNVANFQFLFNMGVRMNLARPKKKSDHAAQHGIELGLKIPTINTNY 720

```

Query: 721 YSFMGAELKYRRLYSVYLNIVFAY 744  
 YSFMGAELKYRRLYSVYLNIVFAY  
 Sbjct: 721 YSFMGAELKYRRLYSVYLNIVFAY 744

tr Q6T8D3 BabA [Helicobacter pylori (Campylobacter 742 AA  
 Q6T8D3\_HELPY pylori)] align

Score = 1281 bits (3314), Expect = 0.0

Identities = 639/726 (88%), Positives = 657/726 (90%), Gaps = 1/726 (0%)

Query: 20 AEDDGFYTSVGYQIGEEAQMVTNTKGIQDLSDRYESLNNLLNRYSTLNTLIKLSADPSAI 79  
 AEDDGFYTSVGYQIGEEAQMVTNTKGLQ LSD YE LNNLL RYSTLNTLIKLSADPSAI  
 Sbjct: 17 AEDDGFYTSVGYQIGEEAQMVTNTKGIQQLSDNYEKLNNLLTRYSTLNTLIKLSADPSAI 76

Query: 80 NAVRENLGASAKNLIGDKANSPAYQAVLLAINAAVGFWNVVGYVTQCGGNANGQKSISSK 139  
 NAVRENLGASAKNLIGDKANSPAYQAVLLAINAAVGFWNVVGYVTQCGGN NGQ+S SS  
 Sbjct: 77 NAVRENLGASAKNLIGDKANSPAYQAVLLAINAAVGFWNVVGYVTQCGGNMNGQESTSST 136

Query: 140 TIFNNEPGYRSTSITCSLNGHSPGYGPMSENFKKLNEAYQILQTALKRGLPALKENNG 199  
 TIFNNEPG+RS SITCSLNG+ PGYGPMSIENFKKLINEAYQILQTALK+GLPALKENNG  
 Sbjct: 137 TIFNNEPGHRSASITCSLNGYKPGYGPMSIENFKKLINEAYQILQTALKQGLPALKENNG 196

Query: 200 KVN-VTTYTYTCSGDGNNNCSSQVTGVNNQKDGTTKTIQTIDGKSVTTTISSKVVDSDRADG 258  
 + VTTYTYTCSG GNNCS Q TG+N Q G+KT IQTIDGK+V TTIS KVVDS A G  
 Sbjct: 197 TLKEVTTYTYTCSGKGNNNCSEQATGINRQNGGSKTTIQTIDGKTVRTTISLKVVDSTASG 256

Query: 259 NTTGVSYTEITNKLEGPDXXXXXXXXXXXTLINTINNACPYFHASNSSEANAPKFSTTTG 318  
 NT+ VSYTEITNKL+GVPD TLINTIN ACPEYHA+NSSEANAPKFSTT+G  
 Sbjct: 257 NTSHVSYTEITNKLDGVPDQAQALLAQASTLINTINEACPYFHANNSSSEANAPKFSTTSG 316

Query: 319 KICGAFSEEISAIQKMITDAQELVNQTSVINEHEQTPVGNNGKPFNPFTDASFAQGML 378  
 KICGAFSEEISAIQKMITDAQELVNQTSVINEHEQ+TP+GNNGKPFNP+TDASFAQGML  
 Sbjct: 317 KICGAFSEEISAIQKMITDAQELVNQTSVINEHEQSTPIGNNGKPFNPYTDASFAQGML 376

Query: 379 ANASQAQKMLNLAEQVGQAINPERLSGTFQNFVKGFLATCNNXXXXXXXXXXXXXXXXXVT 438  
 ANA AQAQKMLNLAEQVGQAINPERLSG F+NFV GFLATCNN VT  
 Sbjct: 377 ANAQAQAKMLNLAEQVGQAINPERLSGAFKNFVTGFLATCNPSTAGTSGTQGSAPGTVT 436

Query: 439 TQTFASGCAYVGQTITNLKNSIAHFGTXXXXXXXXXXXXTLVNFKSRYSELGNTYNSIT 498  
 TQTFASGCAYV QTITNL NSI HFGT DTLVNFKSRYSELGNTYNSIT  
 Sbjct: 437 TQTFASGCAYVEQTITNLNTSITHFGTQEQIQQAENIADTLVNFKSRYSELGNTYNSIT 496

Query: 499 TALSNI PNAQSLQNAVSKKNNPYSPOGIDTNYLLNQNSYNQIQ TINQELGRNPFRKVGIV 558  
 TALS+IPNAQSLQNAVSKKNNPYSPOGI+TNYYLNQNSYNQIQ TINQELGRNPFRKVGIV  
 Sbjct: 497 TALSSI PNAQSLQNAVSKKNNPYSPOGIETNYLLNQNSYNQIQ TINQELGRNPFRKVGIV 556

Query: 559 SSQTNGAMNGIGIQVGYKQFFGQKRKWGARYYGFFDYNHAFIKSSFFNSASDVWTYGFG 618  
 SSQTNGAMNGIGIQVGYKQFFGQKRKWGARYYGFFDYNHAFIKSSFFNSASDVWTYGFG  
 Sbjct: 557 SSQTNGAMNGIGIQVGYKQFFGQKRKWGARYYGFFDYNHAFIKSSFFNSASDVWTYGFG 616

Query: 619 ADALYNFINDKATNFLGKNNKLSVGLFGGIALAGTSWLNSEYVNLATMNNVYNAMNVAN 678  
 ADALYNFINDKATNFLGKNNKLSVGLFGGIALAGTSWLNSEYVNLATMNNVYNAMNVAN  
 Sbjct: 617 ADALYNFINDKATNFLGKNNKLSVGLFGGIALAGTSWLNSEYVNLATMNNVYNAMNVAN 676

Query: 679 FQFLFNMGVRMNLARPKKKDSHAAQHGIELGLKIPTINTNYYSFMGAELKYRRLYSVYL 738



FQFLFNMGVAMNLAAPKKKSDHAAQHGIELGLKIPTINTNYYSFMGAELKYRRLYSVYL  
 Sbjct: 677 FQFLFNMGVAMNLAAPKKKSDHAAQHGIELGLKIPTINTNYYSFMGAELKYRRLYSVYL 736  
 Query: 739 NYVFAY 744  
 NYVFAY  
 Sbjct: 737 NYVFAY 742

tr Q7WV80 Adhesin-binding fucosylated histo-blood group antigen 736  
 Q7WV80\_HELPY (Fragment) AA  
 [babB] [Helicobacter pylori (Campylobacter pylori)] align

Score = 1265 bits (3274), Expect = 0.0  
 Identities = 633/737 (85%), Positives = 654/737 (87%), Gaps = 1/737 (0%)

Query: 1 MKKHIXXXXXXXXXXXXXAEDDGFYTSVGYQIGEAQMVTNTKGIQDLSDRYESLNNLL 60  
 MKKHI AEDDGFY S GYQIGEAQMVTNTKGIQ LSD YE+LNNLL  
 Sbjct: 1 MKKHILSLTLGSLVSTLSAEDDGFYMSAGYQIGEAQMVTNTKGIQQLSDNYENLNNLL 60  
 Query: 61 NRYSTLNTLIKLSADPSAINAVRENLGASAKNLIGDKANSPAYQAVLLAINAAVGFWNVV 120  
 RYSTLNTLIKLSADPSAINA RENLGASAKNLIGDKANSPAYQAVLLAINAAVGFWNVV  
 Sbjct: 61 TRYSTLNTLIKLSADPSAINAARENLGASAKNLIGDKANSPAYQAVLLAINAAVGFWNVV 120  
 Query: 121 GYVTQCGGNANGQKSISSTIFNNEPGYRSTSITCSLNGHSPGYGPMSENFKKLNEAY 180  
 GYVTQCGGNANGQ+S SS TIFNNEPGYRSTSITCSLN + PGYGPMSENFKKLNEAY  
 Sbjct: 121 GYVTQCGGNANGQESTSSTIFNNEPGYRSTSITCSLNRYVPGYGPMSENFKKLNEAY 180  
 Query: 181 QILQTALKRGLPALKENNGKVNVTYTYTCSGDGNNNCSSQVTGVNNQKDGTCTKIQTIDG 240  
 QILQTALK GLPALKENNGKV+V+YTYTCSG+GNNNC + TGV Q +KT+ Q IDG  
 Sbjct: 181 QILQTALKNGLPALKENNGKVDVSYTYTCSGEGNNNCSEATGVE-QNGRSKTETQIIDG 239  
 Query: 241 KSVTTTISSEKVVDSRADGNTTGVSYTEITNKLEGPDPDXXXXXXXXXXTLINTINNACPYF 300  
 KSVTTTISSEKVVDS+A GNT+GVSYTEITNKL+GVED TLINTIN ACPYF  
 Sbjct: 240 KSVTTTISSEKVVDSKAAGNTSGVSYTEITNKLDGVPDQAQALLAQASTLINTINTACPYF 299  
 Query: 301 HASNSSEANAPKFSTTTGKICGAFSEEISAIQKMITDAQELVNQTSVINEHEQTTPVGNN 360  
 A+NSSEANAPKFSTTTGKICGAFSEEISAIQKMITDAQELVNQTSVINEHEQ+TP+GNN  
 Sbjct: 300 RANNSSEANAPKFSTTTGKICGAFSEEISAIQKMITDAQELVNQTSVINEHEQSTPIGNN 359  
 Query: 361 NGKPFNPFTDASFAQGMLANASQAQKMLNLAEQVGQAINPERLSGTFQNFVKGFILATCNN 420  
 NGKPFNPFTDASFAQGMLANASQAQKMLNLA QVGQ INP+ L+G F+NEV GFILATCNN  
 Sbjct: 360 NGKPFNPFTDASFAQGMLANASQAQKMLNLAEQVGQAINPDNLGTFKFNFTVGFILATCNN 419  
 Query: 421 XXXXXXXXXXXXXXXVTTQTFAAGCAYVGTITNLKNSIAHFGTXXXXXXXXXXXXDTL 480  
 VTTQTFAAGCAYV QTITNL NSIAHFGT DTL  
 Sbjct: 420 PSTAGTGGTQGSAPGTVTTQTFAAGCAYVEQTITNLNSIAHFGTQEQQIQQAENIADTL 479  
 Query: 481 VNFKSRYSELGNTYNSITTALSNI PNAQSLQNAVSKKNPYSPQIDTNYILNQNSYNQI 540  
 VNFKSRY+ELGNTYNSITTALSNI PNAQSLQNAVSKKNPYSPQGI+TNYILNQNSYNQI  
 Sbjct: 480 VNFKSRYNELGNTYNSITTALSNI PNAQSLQNAVSKKNPYSPQGIETNYILNQNSYNQI 539  
 Query: 541 QTINQELGRNPFRKVGIVSSQTNNGAMNGIGIQVGYKQFFGQKRKWGARYYGFFDYNHAF 600  
 QTINQELGRNPFRKVGIV SQTNNGAMNGIGIQVGYKQFFGQKRKWGARYYGFFDYNHAF  
 Sbjct: 540 QTINQELGRNPFRKVGIVSGQTNNGAMNGIGIQVGYKQFFGQKRKWGARYYGFFDYNHAF 599  
 Query: 601 IKSSFFNSASDVWTYGFGADALYNFINDKATNFLGKNNKLSVGLFGGIALAGTSWLNSEY 660

```

      IKSSFFNSASDVWWTYGFADALYNFINDKATNFLGKNNKLSVGLFGGIALAGTSWLNSEY
Sbjct: 600 IKSSFFNSASDVWWTYGFADALYNFINDKATNFLGKNNKLSVGLFGGIALAGTSWLNSEY 659

      VNLATMNNVYNAKMNVANFQFLFNMGVRMNLARPKKKDSHAAQHGIELGLKIPTINTNY 720
      VNLAT+NNVYNAKMNVANFQFLFNMGVRMNLARPKKKDSHAAQHGIELGLKIPTINTNY
Sbjct: 660 VNLATVNNVYNAKMNVANFQFLFNMGVRMNLARPKKKDSHAAQHGIELGLKIPTINTNY 719

      YSFMGAELKYRRLYSVY 737
      YSFMGAELKYRRLYSVY
Sbjct: 720 YSFMGAELKYRRLYSVY 736

```

```

tr Q7WV81      Adhesin-binding fucosylated histo-blood group antigen      737
   Q7WV81_HELPY (Fragment)      AA
                   [babB] [Helicobacter pylori (Campylobacter pylori)]      align

```

Score = 1262 bits (3266), Expect = 0.0  
 Identities = 632/737 (85%), Positives = 651/737 (87%)

```

Query: 1  MKKHIXXXXXXXXXXXXXAEDDGFYTSVGYQIGEAQMVTNTKGIQDLSDRYESLNNLL 60
      MKKHI      AEDDGFYTSVGYQIGEAQMVTNTKGIQDLSDRYESLNNLL
Sbjct: 1  MKKHILSLTLGSLLVSTLSAEDDGFYTSVGYQIGEAQMVTNTKGIQDLSDRYESLNNLL 60

Query: 61  NRYSTLNTLIKLSADPSAINAVRENLGASAKNLIGDKANSPAYQAVLLAINAAVGFWNVV 120
      NRYSTLNTLIKLSADPSAINA RENLGASAKNLIGDKANSPAYQAVLLAINAAVGFWNVV
Sbjct: 61  NRYSTLNTLIKLSADPSAINAARENLGASAKNLIGDKANSPAYQAVLLAINAAVGFWNVV 120

Query: 121 GYVTQCGGNANGQKSISSTIFNNEPGYRSTSITCSLNGHSPGYGPMSENFKKLNEAY 180
      GYVTQCGGNA+G++S SS TIFNNEPGYRSTSITCSLNGH PGYGPMSENFKKLNEAY
Sbjct: 121 GYVTQCGGNAHGRESTSSTIFNNEPGYRSTSITCSLNGHRPGYGPMSENFKKLNEAY 180

Query: 181 QILQTALKRGLPALKENNGKVNVTYTYTCSGDGNNNCSSQVTGVNNQKDGTCTKIQTIDG 240
      QILQTALK+GLEALKENN VNVTYTYTCSGDGN+NCS VTGVN+Q +GTRT QTIDG
Sbjct: 181 QILQTALKQGLPALKENNRTVNVTYTYTCSGDGNDNCS PNVTGVNDQHNGTKTTTQTIDG 240

Query: 241 KSVTTTISSKVVDSDRADGNTTGVSYTEITNKLEGVPDXXXXXXXXXXTLINTINNACPYF 300
      KSVTTTISSKVVDSD A NT+ VSYTEITN L VPD      TLINTIN AGP+F
Sbjct: 241 KSVTTTISSKVVDSDNAKDNTSHVSYTEITNHLNDVPDQAALLAQASTLINTINTACPF 300

Query: 301 HASNSSEANAPKFSTTTGKICGAFSEEISAIQKMITDAQELVNQTSVINEHEQTTPVGNN 360
      HA+NSSEANAPKFSTT GKICGAFSEEIS IQKMITDAQELVNQTSVIN +EQ+TPV N
Sbjct: 301 HANNSSSEANAPKFSTTIGKICGAFSEEISTIQKMITDAQELVNQTSVINSNEQSTPVDGN 360

Query: 361 NGKPFNPFTDASFAQGMLANASQAQKMLNLAEQVGQAINPERLSGTFQNFVKGFLATCNN 420
      NGKPFNPFTDASEAQGMLANASQAQKMLNLAEQVGQAINPE L+G+F+NFV GELATCNN
Sbjct: 361 NGKPFNPFTDASFAQGMLANASQAQKMLNLAEQVGQAINPENLTGSFKNFVTGFLATCNN 420

Query: 421 XXXXXXXXXXXXXXXXVTTQTTFASGCAYVQTITNLKNSIAHFGTXXXXXXXXXXXXDTL 480
      VTTQTTFASGCAYV QTITNL NSIAHFGT      DTL
Sbjct: 421 LSTAGTGSTQGSAPGTVTTQTTFASGCAYVEQTITNLNSIAHFGTQEQQIQQAENIADTL 480

Query: 481 VNFKSRYSSELGNTYNSITTALSNIQSLQNAVSKKNNPYPSPQGIDTNYILNQNSYNQI 540
      VNF+SRYSSELGNTYNSITTALS +PNAQSLQN VSKKNNPYPSPQGIDTNYILNQNSYNQI
Sbjct: 481 VNFRRYSSELGNTYNSITTALSKVPNAQSLQNVVSKKNNPYPSPQGIDTNYILNQNSYNQI 540

Query: 541 QTINQELGRNPFRKVGIVSSQTNNGAMNGIGIQVGYKQFFGQKRKWGARYYGFFDYNHAF 600

```

```

          QTINQELGRNPFPRKVGIV SQTNNGAMNGIGIQVGYKQFFGQKRKWGARYYGFFDYNHAF
Sbjct: 541 QTINQELGRNPFPRKVGIVGSQTNNGAMNGIGIQVGYKQFFGQKRKWGARYYGFFDYNHAF 600

Query: 601 IKSSFFNSASDVWWTYGFADALYNFINDKATNFLGKNNKLSVGLFGGIALAGTSWLNSEY 660
          IKSSFFNSASDVWWTYGFADALYNFINDKATNFLGKNNKLSVGLFGGIALAGTSWLNSEY
Sbjct: 601 IKSSFFNSASDVWWTYGFADALYNFINDKATNFLGKNNKLSVGLFGGIALAGTSWLNSEY 660

Query: 661 VNLATMNNVYNAKMNVANFQFLFNMGVRMNLARPKKKSDHAAQHGIELGLKIPTINTNY 720
          VNLATMNNVYNAKMNVANFQFLFNMGVRMNLAR KKK SDHAAQHGIELG+KIPTINTNY
Sbjct: 661 VNLATMNNVYNAKMNVANFQFLFNMGVRMNLARSKKKSDHAAQHGIELGVKIPTINTNY 720

Query: 721 YSFMGAELKYRRLYSVY 737
          YSFMGAELKYRRLYSVY
Sbjct: 721 YSFMGAELKYRRLYSVY 737

```

```

tr O25840      Outer membrane protein (Omp28) [HP1243] [Helicobacter      733
    O25840_HELPY pylori
                  (Campylobacter pylori)]
                                     AA
                                     align

```

Score = 1258 bits (3255), Expect = 0.0  
 Identities = 636/744 (85%), Positives = 652/744 (87%), Gaps = 11/744 (1%)

```

Query: 1  MKKHIXXXXXXXXXXXXXXXXXAEDDGFYTSVGYQIGEEAQMVTNTKGIQDLSDRYESLNNLL 60
          MKKHI AEDDGFYTSVGYQIGEEAQMVTNTKGIQ LSD YE+IANNLL
Sbjct: 1  MKKHILSLALGSLVSTLSAEDDGFYTSVGYQIGEEAQMVTNTKGIQQLSDNYENLNNLL 60

Query: 61  NRYSTLNTLIKLSADPSAINAVRENLGASAKNLIGDKANS PAYQAVLLAINAAVGFWNVV 120
          RYSTLNTLIKLSADPSAINAVRENLGASAKNLIGDKANS PAYQAVLLAINAAVGFWNVV
Sbjct: 61  TRYSTLNTLIKLSADPSAINAVRENLGASAKNLIGDKANS PAYQAVLLAINAAVGFWNVV 120

Query: 121 GYVTQCGGNANGQKSISSTKTFNNEPGYRSTSITCSLNHSPGYGPMSENFKKLNEAY 180
          GYVTQCGGNANGQ+S SS TTNNEPGYRSTSITCSLNH SPGYGPMSENFKKLNEAY
Sbjct: 121 GYVTQCGGNANGQESTSSTTFNNEPGYRSTSITCSLNHSPGYGPMSENFKKLNEAY 180

Query: 181 QILQTALKRGLPALKENNGKVNVTYTYTCSGDNMNCSSQVTGVNNQKDGTCTKIQTIDG 240
          QILQTALK GLPALKENNGKV+VTYTYTCSG GNNCS V +GKT QTIDG
Sbjct: 181 QILQTALKNGLPALKENNGKVSVTYTYTCSGQGNMNCSPSV-----NGTKTTTQTIDG 233

Query: 241 KSVTTTISSKVVDSRADGNTTGVSYTEITNKLEGPDPXXXXXXXXXXTLINTINNACPYF 300
          KSVTTTISSKVV S A GNT+ V ITNKL+GVPD TLINTIN ACPYF
Sbjct: 234 KSVTTTISSKVVGSIASGNTSHV----ITNKLDGVPDSAQALLAQASTLINTINEACPYF 289

Query: 301 HASNSSEANAPKFSTTTGKICGAFSEEISAIQKMITDAQELVNQTSVINEHEQTTPVGNN 360
          HA+NSSEANAPKFSTTTGKICGAFSEEISAIQKMITDAQELVNQTSVIN +EQ+TFVGNN
Sbjct: 290 HATNSSEANAPKFSTTTGKICGAFSEEISAIQKMITDAQELVNQTSVINSNEQSTPVGNN 349

Query: 361 NGKPFNPFTDASFAQGMLANASQAQKMLNLAEQVGQAINPERLSGTFQNFVKGFLATCNN 420
          NGKPFNPFTDASFAQGMLANASQAQKMLNLA QVGQAINPE LS F+NEV GFLATCNN
Sbjct: 350 NGKPFNPFTDASFAQGMLANASQAQKMLNLAHQVGQAINPENLSENFKNFVTGFLATCNN 409

Query: 421 XXXXXXXXXXXXXXXXXXXVTTQTFAAGCAYVQTITNLKNSIAHFGTXXXXXXXXXXXXDTL 480
          VTTQTFAAGCAYV QT+TNL NSIAHFGT DTL
Sbjct: 410 KSTAGTGGTQGSAPGTVTTQTFAAGCAYVEQTLNLGNSIAHFGTQEQQIQQAENIADTL 469

Query: 481 VNFKSRYSSELGNTYNSITTALSNIPNAQSLQNAVSKKNNPYSPOGIDTNYILNQNSYNQI 540

```

2826561 PMID: 10762234

**Functional expression in Escherichia coli and membrane topology of porin HopE, a member of a large family of conserved proteins in Helicobacter pylori.**

Bina J; Bains M; Hancock R E

Department of Microbiology, University of British Columbia, Vancouver, British Columbia V6T 1Z3, Canada.

Journal of bacteriology (UNITED STATES) May 2000, 182 (9) p2370-5, ISSN 0021-9193 Journal Code: 2985120R

Publishing Model Print

Document type: Journal Article

Languages: ENGLISH

Main Citation Owner: NLM

Record type: MEDLINE; Completed

Subfile: INDEX MEDICUS

HopE is one of the smallest members of a family of 31 outer membrane proteins in *Helicobacter pylori* and has been shown to function as a **porin**. In this study it was cloned into *Escherichia coli* where it was expressed in the outer membrane, as confirmed by indirect immunofluorescence using HopE-specific antibodies. HopE purified from *E. coli* reconstituted channels in planar bilayer membranes that were the same size as those formed by HopE purified from *H. pylori*. A model of the membrane topology of HopE was constructed and indicated that this protein formed a beta-barrel with 16 transmembrane amphipathic beta-strands. The accuracy of this model was tested by linker insertion mutagenesis, assuming that, like other **porins**, amino acid insertions were not tolerated in the transmembrane beta-strands but were tolerated in the adjoining loop regions. Generally, the results obtained with a series of 12 insertions of the sequence RSKDV and two substitutions were consistent with the topological model. The preponderance of amino acids that were **conserved** in the extended family of HopE paralogs were predicted to be within the membrane and comprised 45% of all residues in the membrane.

Tags: Research Support, Non-U.S. Gov't

Descriptors: \*Bacterial Proteins--metabolism--ME; \*Escherichia coli--metabolism--ME; \*Helicobacter pylori--metabolism--ME; \*Porins--metabolism--ME; Amino Acid Sequence; Cloning, Molecular; Gene Expression; Helicobacter pylori--genetics--GE; Models, Biological; Molecular Sequence Data; Porins--genetics--GE

CAS Registry No.: 0 (Bacterial Proteins); 0 (Porins)

Record Date Created: 20000613

Record Date Completed: 20000613

? logoff hold

05may05 12:44:23 User228206 Session D2441.6

\$0.09 0.029 DialUnits File155

\$0.21 1 Type(s) in Format 9

\$0.21 1 Types

\$0.30 Estimated cost File155

\$0.17 0.029 DialUnits File5

\$0.17 Estimated cost File5

\$0.31 0.029 DialUnits File73

\$0.31 Estimated cost File73

\$0.09 0.029 DialUnits File143

\$0.09 Estimated cost File143

\$0.36 0.029 DialUnits File399

\$0.36 Estimated cost File399

\$0.13 0.029 DialUnits File51

\$0.13 Estimated cost File51

\$0.11 0.029 DialUnits File144

\$0.11 Estimated cost File144

\$0.14    0.029 DialUnits File349  
\$0.14 Estimated cost File349  
    \$0.17    0.029 DialUnits File654  
\$0.17 Estimated cost File654  
    OneSearch, 9 files, 0.258 DialUnits FileOS  
\$0.26 TELNET  
\$2.04 Estimated cost this search  
\$2.04 Estimated total session cost 0.258 DialUnits

Logoff: level 05.02.01 D 12:44:23

You are now logged off